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By- Jones, Christina C., Ed.

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The proceedings from an interdisciplinary work conference, sponsored by the Ohio Division of Special Education to utilize information from 5 years of an ongoing study (1960-65), include three papers and several discussion summaries. Papers on hearing handicapped and deaf children consider implications for medical services; audiological evaluation, including testing, services, theory, and treatment; and educational programs involving individual instruction, supervision of teachers, and a total plan for preschool to adulthood with continuous curriculum planning, parent guidance, and vocational education. Reports of the discussion groups include recommendations concerning the child population, instructional programs, personnel and staff, and research and evaluation. A followup conference was planned for December 1966. (JB)

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THE GRANVILLE

INVITATIONAL WORK CONFERENCE

ON

HEARING HANDICAPPED CHILDREN IN OHIO

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Issued by
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Superintendent of Public Instruction
Columbus, Ohio

1966

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THE GRANVILLE

INVITATIONAL WORK CONFERENCE

ON

HEARING HANDICAPPED CHILDREN IN OHIO

Edited by

Christina C. Jones
Educational Consultant
Hearing Impaired

STATE BOARD OF EDUCATION
OHIO

HAROLD J. BOWERS
Deputy Superintendent

S. J. BONHAM, JR.
Director, Division of Special Education

OHIO DEPARTMENT OF EDUCATION
COLUMBUS, OHIO

1966

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The Division of Special Education wishes to express grateful appreciation to the many individuals who participated in this conference. The three consultants who presented addresses at the plenary sessions so ably, the invited participants whose wholehearted cooperation contributed so materially to the discussion groups, the support and encouragement of staff members of the Ohio Department of Education and the staff of the Ohio Department of Health, Division of Child and Maternal Health for their tireless efforts, cooperation and coordination of activities exemplified clearly that through such a meeting an exchange of ideas, information and thinking could take place at the highest level.

For the financial support, greatest appreciation is expressed to Dr. Effie Ellis and the Ohio Department of Health. Sincere appreciation is also expressed to the local school administrators who made it possible for members of the teaching staff and supervisors to attend the conference.

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PART I

INTRODUCTION

In May 1960, the Ohio Department of Education initiated an "on-going" study of the educational programs for children with hearing impairment. An out-of-state consultant was employed to direct the initial study. In a prior agreement, the consultant was to spend one week visiting the residential school and day schools selected within easy travel distance of Columbus. The visitation was to include observing classroom instruction, holding conferences with supervisors and classroom teachers regarding organization and curricula, reviewing information contained in the children's file folders such as medical history, hearing loss, intelligent quotients, school achievement; and that pertaining to the certification of teachers. Following the week of visitation, the consultant prepared a written report in the form of a letter and submitted it to the Assistant Superintendent of Public Instruction. This report dated May 24, 1960, one week following the visitation; was duplicated and distributed to all of the school districts maintaining educational programs for hearing impaired children.

As a follow-up and implementation of the suggestions of the initial study, during the 1962-63 school year, the Ohio Department of Education, Division of Special Education employed two university staff persons in the area of teacher education of hearing impaired children to conduct a full-scale study of educational programs at the residential school and in day schools. The study was to be comprehensive so a one year period of time was allotted. At the end of the year, these consultants were asked to submit a written report of their findings with suggestions for improving program and services for hearing impaired children. As in the case of many such projects and studies the time allotted was not sufficient for the completion of the study so the written report was not made available until late in the 1963 school year.

Procedures of the 1962-63 Study

The staff persons elected to use basic data sheets to obtain information for each child enrolled in program at the residential school and in day schools. The data included medical history, family history, cause of hearing impairment, if known, age of onset, audiological and psychological information, number of years child had been in school, school progress and other pertinent information which was available from school records. The basic data sheets were completed by supervisors and/or classroom teachers. The basic data sheets were designed primarily to collect information quickly, systematically and to simplify the tabulation of results.

Following the compilation of the information from the basic data sheets the American School Achievement Test was administered to children age six and over. The decision to use this test was based upon the ease of administration and because it had not been used widely in the state previously. Special test instructions were prepared to insure uniformity of administrative procedures and to insure better understanding. Several forms of the test were used. The results were tabulated to provide statistical information on academic achievement and functioning level of children in reading, language and arithmetic.

The findings, statistical tables, summary and recommendations were submitted in a fifty-seven page report prepared by the consultants who were assisted in the preparation of the report by their secretarial staff and graduate students. A general distribution of this report was not made.

The Advisory Committee of the Division of Special Education held a one day meeting to discuss the report. This Committee composed of representative people from the school districts providing special education programs for hearing impaired children suggested that the Division of Special Education prepare additional statistical tables to clarify some of the questions which arose during the discussion of the tables found in the original report. The Committee was re-convened following the period allotted for the preparation of the additional information. At a meeting of the Advisory Committee held in 1965, when the participants had had an opportunity to review all of the information and discuss it thoroughly, they suggested that the report be used as the basis for further consideration and suggested that a work conference be held.

As a result, a proposal for a three day work conference was written and submitted to Effie Ellis, M.D., who was then Chief of the Division of Child and Maternal Health, Ohio Department of Health. The proposal included suggestions for participants to be selected from educators, representatives of health departments, welfare agencies, community agencies, and consultants were to be invited to participate in the program. It also requested that the expenses of such a conference be funded through a grant, if possible. The proposal was submitted by Dr. Ellis, who secured the grant of money to cover the expenses of the participants and the consultants. The staffs from the Division of Special Education and the Division of Child and Maternal Health coordinated the activities of the three day conference.

The problems to be studied were as follows:

1. The establishment of units for educational experimentation
2. Adequate programming of multi-handicapped children
3. Curriculum study
4. In-service workshops for teachers
5. Problems in supervision
6. Vocational rehabilitation services
7. Academic achievement of hearing handicapped children

8. Parent education
9. Work-training, work-study programs
10. Evaluation and reporting procedures to assure uniformity
11. Secondary programs
12. Coordination of community resources and agencies

Three consultants from out-of-state representing the fields of the education of the deaf, medicine and audiology were invited to present formal addresses at the plenary sessions. Following these, small group discussion sessions were held. The participants were divided into four groups with one person acting as recorder. Each of the groups discussed aspects and viewpoints of the consultant's formal presentation. The composition of each group changed following each plenary session so everyone had the opportunity to discuss and share in the discussions with each and every other participant.

The last session of the conference was devoted to presentation of summary and recommendations to the entire group. These were presented formally and are recorded in this report.

The Division of Special Education is planning to hold another such conference in December 1966, at which time the same group of participants will be invited to meet and discuss this report and suggest possible ways of implementing the recommendations.

PART II

The complete addresses of the three consultants and summary follow.

A

Fred Richardson, M.D.
Department of Pediatrics
John Hopkins Hospital
Baltimore, Maryland

MEDICAL IMPLICATIONS FOR HEARING HANDICAPPED CHILDREN

I was very honored to be asked to come here and 'tis with some temerity that I talk to educators because I suspect that many of them look on physicians with some suspicion and probably rightly so. When I accepted the invitation, I had to decide whether I was going to talk to you as a group of experts or as a group of human beings and I will leave it to you to decide the nature of my choice. It is obvious that one cannot encompass the "Medical Implications for Hearing Handicapped Children" in the time that we have, but I thought I'd discuss informally some thoughts and experiences that I have gleaned at Hopkins and prior to going there.

At John Hopkins Hospital we ourselves have handled in our unit in some detail something like twelve hundred children and families. We work in association with the Hardy Clinic. I will try to define any terms I use as I go along and perhaps constructively destroy the concepts that I put forward. I must say that at this stage I am very grateful for the experience I have been able to have at Hopkins. They cannot be held responsible for my opinions unless they agree with them, and things you agree with are probably theirs and those you disagree with are probably my own. I think it is true to say, in general, physicians know very little about the complex auditory problems. It is obvious they are familiar with the problems of peripheral deafness, partial deafness due to middle ear disease, acute otitis media, illness causing deafness, the deafness associated with cleft palate, although often not as simple as thought to be, are well known to physicians. They have become competent in treatment of these disorders. They have become brilliantly competent in operations involving the ear which improve the hearing of many people, particularly the older patient. However, when you get to the problem of the child with a profound hearing or an auditory impairment, it seems we do not have very many physicians who have been really interested in this problem. As educators you might say that once progressive disease of the auditory system has been ruled out that the physician really might as well withdraw from the picture - that this is an educational problem. There is an element of truth in the statement as is true of many of the problems of chronic disease of childhood where the educator and all of the associated disciplines have a great deal more to do with formulating the child's life program than the physician or pediatrician does. So I start out pointing out and admitting that many of the members of my profession have not interested themselves adequately in these problems and where they have interested themselves, they have perhaps proved to be interfering and their nuance value has been very considerable on occasions.

We are all familiar with the work of Juan Pablo Bonet, who following Ponce de Leon held that the greatest need of the deaf was mental development and that the major end was written and read language.

Bonet used gesture, pantomine, signs and even developed a manual alphabet and was probably one of the first persons to attempt lipreading that Abbe' de l' Eppe used in France when he was educating deaf children. He shared Bonet's views philosophically - that language was for thinking and reasoning rather than for speech. Then as you know when education of the deaf became more general and not a secret thing that only the sons of the wealthy could perhaps get, there arose a lot of partisan methods both in this country and England which I think probably started with the opening of the first permanent public school for the deaf by Thomas H. Gallaudet in 1817 in Hartford, Connecticut. And now one hundred and fifty years since this original school was established, it was only a year or two ago that Leonard M. Elstad, who is President of Gallaudet said the following, "The fact that an agreement has not been reached in this country since 1817 regarding the education of the deaf is an indication there is a real question as to methods and their effectiveness."

Goldberg said, "Why are teachers of the deaf so satisfied with so many of their pupils who can talk intelligently, lipread successfully, write correctly, but understand so little and have so little perception of the world about them?"

Helmer R. Myklebust noted that in a study of one thousand deaf pupils serious language retardation was present in the deaf child irrespective of the method by which he had been taught.

Now, as we all know, the people I mentioned are controversial figures. Anybody that makes public statements about problems that people are concerned with are controversial figures, but nevertheless, you have to as we heard already this morning consider the different points of view of people who are interested in doing something. There is this one common bond between everybody and that is that they are really trying to do something about these problems. I have not brought these points out as criticism of educators because as I have indicated in the last one hundred fifty years most physicians have done nothing.

Elstad noted that attempts to incorporate physicians in teams with audiologists, otologists, psychologists, social workers, vocational counsellors has been offset by diluting the team with poorly informed members; including educators who were uninformed of available educational programs, enthusiastic clinicians employed in clinics eager to promise sure-fire educational techniques with guaranteed results and normalcy as a consequence of the techniques, avid audiologists who over-exaggerate the use of small remnants of residual hearing, those critics who condemn well-established schools for the deaf that have been in operation many years and finally the well-meaning enthusiasts who promise parents that the child can be taught with hearing children after a few years of intensive training. Now one of the things that worried me initially when I started seeing deaf children in England and in Dr. Hardy's clinic were not the children but the deaf parents of these children. I found that many of them had been to good schools and colleges for the deaf. They were very intelligent and they preferred not to talk to me and not to talk to one another in my presence for fear that I would misunderstand what they had to say about their child. So I wondered then a little bit about what had gone on in all the years of intensive training that these intelligent parents had received.

I found again in the literature the evidence of the cumulative effects of the ignorance that this deaf person has had to grow up in, in spite of the educational efforts. The world of confused professional thinking and untested hypotheses are major handicaps for the severely deaf individual.

The deaf adult is a relatively unknown quantity in educational thinking and yet Edna Levine pointed out that it is a deaf adult who most likely holds the key to many of the unsolved problems in the education of the deaf. He represents when he gets out in the world the ultimate testing ground of all the educational and medical theories that we put forth when he is a sweet, charming, young, intelligent deaf child.

Now, as a pediatrician I observe in all aspects of neurological disease that confusion arises because the children are not static, their lesions may possibly be static, their problems medically appearing or physical handicapping may be fairly static but their own growth and development and their compensations for these problems, particularly, if they have some intelligence, are not at all static. You all know from the inconclusive medical reports you look at hastily and probably put in the back of the record that the etiology of many of these problems is hard to come by and the terminology used by people, not just physicians, but people in your own sphere too, is confusing sometimes. You look it up in the book and the book says something else. If we talk about the profoundly deaf child do we mean the deaf child or do we mean the child with impaired auditory function in its broadest sense? I, myself, like to use the term, the child with profound auditory impairment which does not exclude any child with any hearing problem particularly the complicated ones but I am not suggesting that you should use this term. I find it very confusing to talk about deaf children when they are not deaf or when their behavior is too deaf to be deaf, if you want to put it that way. So this is one point I'm sure we should discuss later in this conference.

Now, medically what breakdowns do we have of children in the residential schools for the deaf who are profoundly deaf or have profound auditory impairment? I think one of the best papers that dealt with the population of schools for the deaf in a particular area was one that came out in the British Medical Journal in February 1962, which described the children in the Sunderland - Durham area. They took all the children that had been born in a ten year period that had been subsequequently admitted to schools for the deaf, looked at this group and looked back to find out the causes of the problems. Most of these children were (I think although, it is hard to be certain from the article and I forgot to ask this when I spoke with some people who wrote the article) I imagine these children were educable and perhaps many were intelligent, so I think that they probably had excluded the children with hearing problems who were severely defective and mentally retarded. They had two hundred seventy cases and they were able to check and examine two hundred fifty-four of them. In sixty-four of the two hundred fifty-four, there was a familial history of deafness or deaf-mutism, a term which people object to but I think it has its use. Sixty-nine or seventy were there because of an infectious or acute illness such as meningitis, encephalitis or some other severe illness. The remainder, one hundred twenty-one had been deaf from an early age but they could find no specific cause of the deafness. They did note that there were a large number of children with a low birth weight suggestive of prematurity. This group also had twice the number of complications at birth than the other comparable control group. They found that they then had a group which represented an incidence in their population of seven hundredths or nearly one per thousand which compares pretty well with estimates in other parts of the country and in other parts of the world. There were three broad groups then twenty-five per cent with family history of deafness; twenty-five per cent with infectious illness often meningitis; and the remaining fifty per cent with no obvious cause but with a high incidence of prematurity. In this group of the profoundly auditory impaired children alone we did have a large number of children who were deaf if you like, from medical causes or where medical problems played a part. This information alone warrants the fact that more physicians ought to become more interested in both the diagnosis and the prevention if possible, of many of these types of deafness.

The problem of the child with low birth weight and prematurity is a burgeoning problem, it is getting bigger all the time. Present pediatric care is saving more children who are at risk. One in four children with low birth weight are at risk for some intellectual, neurological or neuro-sensori difficulty. We are saving considerably more at a time than the population explosion in this country is finding, so it is inevitable that we have more of these children and not less because of better medical care and research to some extent.

Now, let me tell you briefly how we examine the children in the center. We are systematic but we are flexible. We do run through a two day protocol. The patients range in age from infancy to twenty-one years. We do a pretty exhaustive pediatric history ~~which is~~ computor programmed. A comprehensive psychological appraisal which includes many tests from many areas and many subtest items are used. I doubt that psychological evaluation; and test scores were ever recorded for any child on the basis of a specific psychological test. The test batteries are prepared and tailored to some extent for each individual child. It takes from one to several hours for the pediatric and neurological examination and then any necessary further examinations which, of course, for a child with a hearing, speech or language problem involves a complete appraisal in Dr. William Hardy's department and then the routine EEG. Sometimes special EEG's in the form of EEG audiogram, x-rays of the skull and psychiatric and other opinions are requested. Now having said all this, I place very little practical value and importance on the results of audiograms and special tests that I have done although, I consider them interesting. This is because we do not get a population of children in our clinic with simple hearing problems. These have already been screened off and have been handled adequately and treated before we get them. Our population in the clinic consists of children who have more profound and complicated problems, intellectual ability, may be questionable a question of the measure of auditory dysfunction, and in case I upset anybody by this statement, I would emphasize that we always do audiological examinations and plot audiograms. We always take this into the main picture of the child as part of the jig-saw puzzle but we expect our jig-saw puzzle to fit and if a part does not fit, we have to either cut it and shape it up into the picture or we have to try to build another picture. In my opinion, and I suspect that this is true of all of us present in this room that we gain more information from discussing the child's behavior, his response to sound, his reactions to what goes on in the world around him with his family and by careful, prolonged observation of the child. Our own examination of the child is less conflicting in many ways than the results of special examinations. The reason I emphasize this is largely related to time, but I think it is partly because I am concerned in the main with the diagnosis of what I call useful hearing in a child. In this, one has to take note of many forms of responses.

I think that before we go into that I will take the liberty of giving you some idea of my concepts of how hearing develops in children. We will go through this quickly so you can see how my mind works and whether or not you agree with me.

Many people have examined children to find out how they respond to sound. I think there has been a marvelous lot of work done which is well-documented in the literature from many disciplines most of which is not being read. I think if we would stop work on our theories and ideas and would go back and review what has been done before, we would know a lot more than most of us have at our fingertips at the present time.

W. B. Forbes in '47 observed that the unborn child will respond with sudden movements to loud stimuli four or five weeks before birth. These observations have been confirmed by many other observers. From the sixth month of pregnancy an unborn child will respond to sound with violent child movements. The child will respond even if the mother's hearing is completely obscured by any trick you wish to use. Using loud noises, eliminating sound by stuffing up her ears, quiet noise, anything to prevent the mother hearing the sound, the baby will respond and this reaction can be obtained of course, very often in children of deaf mothers and those with profound auditory impairment. I don't say for one monent that this means that the child will not be the same as his mother later on. All I say is that the child will respond to unusual or loud noises and this being demonstrated, that this is not due to tactile responses.

Froeschels and others showed that at a thousand or five hundred cycles per second that the response could be obtained consistently in the ear of the fetus. They feel that this was not a tactile response. So we have evidence then that the fetus will respond to sound. We do not know exactly what this means, in fact it is rather interesting to me that many children respond when there is a high background noise level. I will be interested in Dr. Goldstein's comments on this. Many a mother will tell you that at a party or at a concert where there is a loud noise going on that the child is much more active than when a sudden noise occurs. It is almost as if the whole level and pitch of the auditory system was being raised to the higher level when stimuli were introduced which produced a response. This is something we can do with human beings and animals, too. I don't know whether or not this means any further maturity of the auditory system than one would expect in the fetus. What about the new-born child? He will turn his head and eyes quite often to a source of sund. Blanton and others have demonstrated this frequently. In the twelfth week, the head will turn toward the source of sound very rapidly. If we go back to the new-born in a nursery in the first ten days of life there have been occasions where observers feel that the new-born child recognizes the mother's voice to the exclusion of the voice of other mothers and that he will cry when he hears his own mother's voice. I have not had an opportunity to see whether this is a valid observation, but I am giving it to you for what it is worth. So we have in a newborn and in the unborn child evidence of the emergence of a powerful sensory system. We can start to expect good responses from this system in the normal child in the first days, weeks and months of life. We have evidence that such responses occur.

We know that the maturation of the brain is very incomplete, but I think we have become rather confused when we start talking about cortical responses and gray matter and things of this sort. The fact that we have more of it than the animal does not mean that we necessarily understand it. I think, it is not unreasonable to assume that many responses seen in children in the first weeks, and months, and early years of life are not necessarily cortical in the sense that it is used. We know that the acoustic vestibular nerve is very mature at thetime of birth. We know also that neuro-anatomical examination of the auditory pathways within the brain by Fowler, Stern and others show that these are the last of the sensory pathways to become myelinated. This sounds very interesting, but I do not know if the cortex or the pathways have to be myelinated to be stimulated. In fact there is very good evidence to suggest that non-myelinated pathways respond very adequately. We must conclude with a paper of Leipsig that we cannot judge the function of another's pathway by its anatomical structure. Experiments show that in such sensory organ that reflexes can be elicited, and that each sensory nerve of a new born child can transmit stimuli to the brain even though they are on occasions non-myelinated. I think that we must avoid this confused thinking about how well a nerve sheath is and assume that this has something to do with its function. It obviously has something to do with its function but it does not preclude reasonable function at certain levels. Geselle and Amatruda noted that youngsters of eight weeks or younger cease to be disturbed by loud sounds. At eight weeks of age many youngsters will accept these sounds and will attempt to listen to other sounds and ignore interruption. At twenty-four weeks the child will consistently localize the sound and at twenty-eight weeks he will become adept at localizing sound. These are observations of a large number of children many years ago. I think many of us would say this would occur in children at a younger age.

It is interesting that if one wishes to talk about word recognition or discrimination between one word an another that we tried this on one of the babies of one of the members of the clinic staff and found this four or five month old baby would always turn correctly to Mommy or to Daddy when a series of words were presented to the child. This baby between four or five months would always select, identify, the word Mommy or Daddy and always turn directly to that person. I think a little bit of experimentation along these lines is often very interesting and reveals in some children, especially in intelligent children, better auditory function than one might have suspected. This was done in a systematic way to exclude random responses.

Ewing pointed out that a child of twelve weeks of age or more will often recognize different sounds and respond to the mother's voice and ignore many intense sounds, if the mother's voice is present in its environment. From six months of age and more we know that many household sounds are observed.

Meanwhile what is going on with the vocal apparatus? Well, of course, it is being exercised. In fact, my mother-in-law once pointed out when our small child, the first baby, was crying and we were a little apprehensive about it, that it was the only exercise he got and perhaps this was good for the speech and auditory pathways, I don't know. I think Goldstein's book discusses many of the points I have raised in a different and very beautiful way, and said that, "Babble contains sounds which never appear in later language and which do not exist in the language of people around the child and pointed out that many infants lose nearly all of the sounds that they use in the warming-up period of their vocal apparatus at this time." Goldstein stated further that, "The infant repeats these sounds persistently but he loses the capacity to produce them at a later time unless he has acquired motor and sensory images to go along with them." I thought Goldstein also made an important point when he observed that not only in the infant but in later life when one is attempting to find out what a child can learn, that fixation in memory is not at all simply dependent upon repetition, only those repetitions which are imbedded in meaningful relation to what goes on around the total organism are kept in memory. Now again these are points of view and I am giving them to you because I feel that these are part of the background of the problems in which we are all interested. The first utterances of infants are not kept in memory because they do not have relationship to on-going things in the environment. I think it is important also from the point of view of the things that we observe later in the child with a hearing problem, that children are able to inhibit startle responses and/or palpable responses very nicely, when a stimulus is repeated or exhibited again. Thus, I think this is evidence of the maturational effect within the system and it is controlled to some extent by the fact that the child is able to select and discriminate between stimuli based on previous experiences. Thus the child can select the mother's voice out of a paraffle of sounds which surround him and which inhibits his responses. So I believe that it is possible by clinical observation of the child over a period of time, discussion of the first years of the child's life with the parents to learn a great deal. Reports which follow children have often been made when time and haste have influenced the examiner to estimate and frequently make a judgment on incomplete findings.

Now, we all are familiar with what some people call the alerting response in children. I define the alerting response to sound not as the startle response which I regard as a less mature response but as the interruption of a child's on-going activities. He is doing something and a sound is put into his environment. He may transiently interrupt these activities showing by some change in his movement that he is cognizant that something is taking place in his environment which attracts his attention. With maturation a child alerts more consistently to the human voice and often takes less notice to sounds in the environment unless he has attached interesting meanings to them. I think that as we see the child with normal hearing grow up, we observe a steady maturational effect which shows us that these complex processes occur in a spontaneous and effortless manner in children, that is, if normal auditory sensitivity and normal auditory function occurs. It is so beautifully spontaneous and so easy for the child as we all know, he has no problem. Now, I do not want to spend too long on this, but what do I mean by localization or orienting responses to sound? Well, like many of us I have thought a great deal about this. This was really coined from Pavlov's work when he found what he called the orienting responses in dogs a darned nuisance to his experiment. He found that he would be recording a dog. Suddenly something happened in the atmosphere, a bit of plaster would fall from the ceiling, a technician would open a door in the middle of his experiment and the dog would stop doing the things he wanted it to do and do something else. Over a period of a year this got to be such a nuisance that he thought perhaps this was something important, so he studied those responses. He described the orienting responses as follows: "Every sound, be it ever so small, appearing in the midst of habitual sounds and noises which surround the dog is followed by an activity of the skeletal muscles of the animal, the eye lids, ears, nostrils, head or trunk or some other part of the body will turn and take a new position so that the animal can bring about the most favorable stimulation." I think this is important because we see a lot of children who respond to sound and turn their heads in a rather, vague, lumbering manner but this is not a good orienting response in my book. That child is not focusing his receptor surfaces in the most favorable way to get the next sound that comes in. In fact, you give him another sound, and time and time again you get no response at all. You may get one sporadic response, one unexpected response, give the stimulus again and he will no longer respond to the stimulus. This is something I have observed and I am sure many of you have where children respond sporadically to sound but some people might say well, he orients to sound, he does turn to noise, or he turned once, well he doesn't if you look at Pavlov's definition. When Pavlov says, "He not only turned to sound, but he got himself ready for the next one so he could handle it more adequately when it came to him," this is not what we see in the child with profound auditory impairment. The level of these responses are rather interesting anatomically if we want to talk about what the cortex does. Richter and others on the staff at Hopkins showed me a cat that had no brain above the midbrain. It had a brain stem. It had no cerebral hemispheres at all. Forbes and Sherrington conducted like experiments many years ago. Incidentally, I am always a little bit leary of animal experiments, but people are fond of them. They are always telling me about porpoises which talk and other similar things. I have been to see these porpoises and they do talk and it is of interest but I am not sure how much it relates to human function. Anyway, Sherrington many years ago described and showed interesting responses in cats, anger responses to certain selected noises even though they had no hemispheres at all, let alone gray matter. They had the whole of both hemispheres removed. The cat would respond specifically to the bark of a dog with an anger reaction and yet not to other sounds. How does the cat isolate a dog's bark from other sounds if he has nothing above the brain stem? This is surely an interesting fact which may have some significance to all of us.

If you want to go into another modality away from hearing, what about touch? You know we have the three modalities of vision, hearing and touch, at least as the main ones. We talk about localization on the skin as being cortical ability. These cats with no top to their brains, no cortex, no upper brain at all scratch very accurately if you touch their skin as a stimulus. We have already discussed hearing and touch, two of our modalities functioning reasonably effectively in a rather interesting way. That is to say, these sounds have personal significance to this animal which one would not expect if one had taken off or ablated the hemispheres completely. I do not say for a moment that cortical analysis of sound and function does not take place in man, but it is hard for me to explain how some of these responses occur in animals that have no brain apart from the mid-brain. Again I think these are of some interest.

Now what do people mean by discrimination? I hope I am not treading on too many toes this morning, but by discrimination I mean the ability to tell the difference between two stimuli. It does not mean saying what stimulus is what. It just means saying they are different. If you sound a bell or you sound a clapper, the intelligent child indicates these are different sounds, but he is unable even with a thousand or ten thousand trials to say that this is the bell and this is the clapper or other noise makers you chose to use. This to me is discrimination -- the ability to tell the difference at a point in time between two different stimuli. Now the next step after that is recognition, the ability to recognize what these stimuli mean. I have seen and I am sure you have seen children who do this. It is very upsetting to parents and teachers if the child can tell the difference between certain sounds and noises and on rare occasions may even label a sound accurately once in a while. He knows that a telephone bell rang or something of this sort and then doesn't learn to hear properly and take notice of what you say. I always think the telephone bell and the front door bell are rather tricky anyway because I have a dog that knows everything I am going to do by my facial expressions. If I scratch my ear it probably means I am going to the bathroom in ten minutes or I am going to take him for a walk. You can't tell me that children aren't more intelligent than dogs. If the front door bell rings, a child sees his mother take off her apron, pat her hair into place and go to the front door. If the back doorbell rings, she pats her hair into place, but she doesn't take off her apron. If the telephone bell rings, her face lights up and she beams as she dashes to the phone but she doesn't touch her hair and she doesn't touch her apron. I am sure you don't have to be able to hear to know which bell rings. You just have to watch your mother's face and see what she does. The mother will tell you that he knows which bell is ringing! He gets to the front door before I do! Well, it would be a pretty slow child if he didn't! This brings me on to the importance of sound recognition.

The senses of vision, touch and hearing are well documented in the neurological literature by Sir Henry Head and others as the three major senses. They call the inability to recognize information from vision, touch and hearing as agnosias. This doesn't matter particularly, but they did not mean that a man without eyes had a visual agnosia. They meant that a man, who had eyes and could see things but could not recognize them had a visual agnosia. They mean a man that could hear things but could not recognize what he had heard had an auditory agnosia. They added one more rider to this, they said "Not only can he not hear or understand what he hears but when you give him the same stimulus or a comparable stimulus by vision or touch he recognizes it." Although he cannot get it by the one you give to him, he has to build skills by using one of the other sense modalities. A very good example of this would be a child who did not recognize a word by hearing, but if the word was carved in wood would recognize it by touching it and if the word was written he would read it. So I suspect that the old neurological literature which uses the term agnosia may well be applicable to some of the cases we have. We might be able to call them auditory agnosias because many of them do hear but they are unable to recognize or utilize the information they hear. Obviously, when we grow normally as we mentioned before in this effortless manner, we use information at all times from touch, vision and hearing. These are all panned-in-together into a piece of information which we use all the time. Now, we know many infants will recognize spontaneously the clink of a spoon on a cup or a bottle. They will recognize the sound and associate it with food. This is again good old Pavlov himself. Pavlov found that a dog could tell the difference between a thousand cycle stimulus and a one thousand and twelve cycle stimulus when food was involved, and as I said before "Children are as intelligent as dogs although they might not hear in quite the same way." I find the clink of a spoon on a cup a very good useful stimulus. People have told me that retarded children cannot hear or cannot understand what they hear, but I find that many of them respond pretty well to the stimulus associated with food even in infancy. They will immediately burst into tears if the right sound is presented and they are hungry enough. You can demonstrate that a child does have the understanding and recognition of the meaning of sound in your office or clinic for all practical purposes. I have also come to regard the patient's failure to respond to his name in later life and even in early life of some importance.

Personally, in my clinic I like people to turn around when I say their name. If they don't and their name has been said twenty times a day for ten years or five years or something like that, it is said in a whisper and it is said at ninety decibels, it is being said when you put your hand on a hot iron and you got yourself burned, you still put your hand on the iron and still got yourself burned. This means you had your name and you had a good Pavlovian stimulus and you took no notice. You had this stimulus many thousands of times in your life so if you do not respond to it again as a clinician and for practical purposes I regard it as of some importance because I find a child with severe, bilateral deafness with sixty decibels or more in both ears responds nearly all the time to his name, if you say it loud enough. He has no trouble responding to his name. He might turn around if the question be whether you said, "Fred, Ned, Ted, or something." He might turn around wrongly on a few occasions, but he is not going to risk missing out by not turning around or he will turn around if the stimulus sounds anything like his name. We know how easy it is to get children to recognize sound even retarded children. An average intelligent eighteen month old can be put in a class with Pavlov's dogs by spending five cents when the "Good Humor Man" comes around. He requires one stimulus, one exposure, one ice cream cone, one five cents to have permanently imbedded in his memory, the meaning of this stimulus and you are glad that the Good Humor Man does not come around four times a day. Of course, if you have any sense you do not do this until children are five or six years old or until other children teach them the meaning of this important stimulus. We find then that one sound can be imbedded very meaningfully and rapidly within the child's auditory system. It can be a word, a bark of a dog, anything will have a lot of significance and this to me is the most important function of the whole auditory system. I find that a child that can do these things, can do many things, but if he is unable to pass this one test then he is up against it and you are up against it with him. I will leave that now and go on a little bit into some more medical aspects of deafness.

I discussed the survey of the population of the Sunderland-Durham School for the Deaf which is one of the few such surveys. There are many medical curiosities which are only of interest because they teach us something about these problems. There are children with the Hurler's Syndrome and I shall show you a picture of one later on. In the old days about one third of the deaf used to be called gargoyles. I looked through their deafness and I find that they have about five or six different types of deafness, it is not as simple as the books make out. The children who have the wide forelock, the widely spaced eyes very often with eyes of a different color are the children with the so-called "Waardenberg Syndrome." These children are said to make up two per cent of population of schools for the deaf. I honestly don't believe this for as I have walked around schools now I do not believe I have seen anything like two per cent of the population as children with the Waardenberg Syndrome. I would be interested in somebody else's comment upon this. I might point out that this is reported in one of the best pediatric text books.

We see many other causes of deafness where the children have skin abnormalities, because the brain is made of the same material as the skin. When the child is being made, it is not unexpected to find some of the skin abnormalities tying in with brain abnormalities. We have caused a lot of deafness in our time in the treatment of other illnesses with streptomycin which has damaged the vestibule, dihydro-streptomycin which has damaged the cochlea. Although tuberculosis is not rampant in this country any more, it is fairly common. In many countries across the world it is still rampant and is causing a tremendous number of problems.

We pretty well understand the problem of the RH incompatability, the baby born with jaundice and had an exchange transfusion, if he was lucky. If he was unlucky, he became deaf or cerebral palsied with perhaps some problem of retardation. All the books say that these children has high tone deafness. I don't really know any longer what high tone deafness means when I look at how badly these children function. I think it must be more complicated than the books suggest and that some of the audiologists suggest. An examination of some of these children often reveals obviously that they have a pretty complicated pattern of neuro-tissue damage so I suspect that high tone deafness is the thing that you might find on the audiogram on occasion but that the child's dysfunction may well be much more severe than the audiogram suggests.

Children with kidney disorders which are hereditary may have deafness. Tumors and other things may cause deafness. These are the sort of things that physicians have isolated in the past and I say many are medical curiosities.

Now the old question used to be is he deaf or is he retarded? This was no question at all for educators of the deaf. They had been up against this problem for many, many years. Many of the children they recognized as deaf and retarded but the parent's question was always, will my child speak? We know he is mentally slow but will he speak and when will he speak? In my experience in the clinic the general answer to this has been that he will speak at a level compatible with his mental function, his mental age, providing he has no problem within the auditory system. Most of our children will develop speech sooner or later up to a level of their mental function. If, however, he has a problem within the auditory pathway with his hearing or with his comprehension then his problem is the same as the intelligent child but much worse. He is really up against it. I am sure that many of you have observed this.

I can perhaps show you the first slide very quickly. This slide, I am not showing you for the stuff which is on this slide but merely to point out that in 1962 I took out of five hundred very profoundly hearing impaired, the two hundred worst. Two hundred children out of the five hundred we had seen that were really terrible as far as their auditory and speech function were concerned. That was my only criteria for selecting them, they were just the worst of the lot. They were the worst audiologically. I was particularly interested in their lack of speech.

Basically, seventy per cent of the children that came from the Hardy's Clinic were of dull normal intelligence or above and about thirty per cent had the same complex problems. These children were retarded, they had the double lesion, associated retardation with complex auditory dysfunction. It is interesting that in children at the age of one and half or two years where speech or language function is retarded, where there is no complex auditory problem but just a delay, if the children are seen again at say age seven, they often have mental ages of perhaps four to five and their speech and language have caught up considerably. See them again in two years time and their speech and language may be their best scores on items on the various tests that are given them. If they catch up, one very often suspects there is a more complex lesion present with more speech, language or auditory dysfunction than had been suspected initially. The other way of phrasing the question is the child deaf, retarded, or disturbed or is he deaf, retarded and disturbed? And this again is a difficult differential diagnosis to make on occasion. If you follow Leo Kanner's work on the autistic child, he points out that the autistic child continues to function pretty well at an infantile level that is within his environment. However, if you have observed these children over a prolonged period which many people have done, you do see these skills which are often adequate for the child's mental age. Here and there you get a fleeting glimpse of a skill which is out of keeping with all the other behavior he exhibits. The autistic child tends to keep his intelligent face and appearance. He does not relate well to people. I find that mental defectives do not behave this way, they often behave according to their mental age level. They nearly always relate quite well to people usually their affection for you is embarrassing on occasion. They do not know when to limit it or how to limit. I can't say how one can really confuse the child who is autistic or the child who is retarded providing you use the very well delinated criteria. However, when you get to the autistic with hearing problems that is another matter. Leo Kanner pointed out that half the children that were sent to him were deaf and not autistic and Bill Hardy says that a lot of the children sent to him were sent on to Dr. Kanner. I do not know of too much work that has been done in this area. I had the opportunity of speaking with a psychiatrist from Oslo a year or so ago. He also found comparable experience at the Putnam Children's Center in Boston. I have not had the opportunity to visit the center. The psychiatrist pointed out that he had found a poor prognosis in children who lacked speech, who were autistic, who did not have good contact with their surroundings or with animals or people. I think it is very hard to be quite sure of what goes on. He also found that after two or three months of careful observation of the children who were suspected of being autistic and deaf, that he was able to say categorically, that they had normal hearing but it took him a long time to come up with this for certain, whereas, the referring doctor and the audiologist often said the child was deaf. Bergman pointed out that if you listen to what the parents say, the parents will always tell you that the child is not deaf, his behavior is disturbed, he is not a deaf child. So I suggest that in cases where you suspect autism that a discussion of the case with the parents in some detail may be of some use. He has treated four very mute autistic children with intensive psychotherapy in a special treatment home in the last few years and has brought them out of their autism. He thinks once you get rid of the autistic characteristics these children exhibit the usual problems of children with severe communication disorders.

The child pictured in the next slide is one who has an interesting profile. The parents and others interested in the case stated that she did respond to sound during the first year and a half of life but after that she stopped taking any notice of sound. This wasn't because she first of all had first been called one name then another but she had really never taken much notice of either of these names. She is doing quite well in a regular kindergarten. There is no program for educating the deaf. She lives in the mountainous area of the western part of Maryland. They regard her as a small, rather bright child. The actual fact is that she is now about 12, not much bigger than that. She is functioning in the dull normal range of ability and indications are she has a very profound auditory disorder. She is making out quite well in this school situation. Don't ask me what she will do when she is grown up and becomes an adult. Her parents are deaf. I do not have any idea how we are going to cope with this problem. We will just have to see what happens when the time comes.

Slide

This is a boy with Hurler's Syndrome as I mentioned before--the child who has a problem with the tissues of his body. One third of these children tend not to be dwarfed, tend to be intelligent, do not have corneal opacities or blindness and are not as ugly as the other two thirds. They often have auditory problems. These auditory problems may be attributed to very enlarged adenoids and tonsils but for the most part these may be questionable causes. The auditory problem is probably due to a central dysfunction probably within the auditory pathway but we really don't know.

Slide

This is a side view of the boy showing the characteristic facies. Of course, the parents were certain that he did not speak because his tongue was big and thick and stuck out and the usual problem that one runs into. He is in a preschool class.

Slide

This is a boy who presents an interesting case. He has an I.Q. of about one hundred forty. He can't speak. He never turns around at loud sounds. His audiogram is perfectly normal bilaterally by pure-tone audiometry and by psycho-galvanic stimulation. He becomes disturbed and gets mad at his parents or other people because he can't make them understand what he wants to say and of course, with an intelligent quotient of between one hundred thirty and one hundred forty, he has plenty to say. He is in a school for the deaf. He is doing reasonably well there. He now has a vocabulary of about five hundred fairly, clear words, however, you need to use five thousand to have everyday conversation and to be a working man. You also have to understand many more thousand than that to produce your five thousand so in spite of his intelligence, again I don't know well how he will do. I think because of the intelligence, he will do as well as any child with this type of profound auditory impairment can do.

Slide

This is an interesting little girl who was perfectly normal at the age of four and a half. She had a speech vocaulary of five and a half to six year old level. She had a episode of dehydration and vomiting which went on four or five days. She lived just outside Memphis so was admitted to a hospital there. I am showing her to you in case anybody has seen a comparable child. I would be interested in some of your comments. On the third day, while she was in the hospital, when she had been partially rehydrated, she started vomiting again. The doctors did not know what the infection was. There was no pharyngitis or otitis media or any other disturbance. She just had profound vomiting and dehydration. On the third day in the hospital after the illness had been four or five days in duration, she told her parents to stop chattering. She could not understand what they were saying. At about the same time she heard tunes such as the Captain Kangaroo music and other music which she could not possibly hear. It was the wrong time of day, there was no television within a couple of blocks and these were not just tinnitis or noises. She cerebrally identified quite a lot of different tunes. She got increasingly impatient with her parents, and the doctors because she was unable to understand what they said. She was discharged from the hospital after about a week. The first week or two at home she heard a lot of other music, recordings which were not being played. Then she stopped complaining of this and at that time the parents noted the quality of her speech was beginning to deteriorate. They took her to Memphis where they had audiological studies. First of all they were told that she had a high tone loss. They took her back two months after that when the illness would have been about three months or more. At this time they were told that she was totally deaf and would not hear a thing. At about this time her little brother died of another illness. At that time her behavior was becoming rather bizarre. She could not make herself understood. She could not hear what was going on around her and people thought she was disturbed because her brother had died in the interim. So they took her to a psychiatrist who agreed that she was disturbed because of her brother's death. She did not become less disturbed, she became more and more upset as people did not understand her problem. It was not until the parents in desperation placed her in a small school for deaf and auditorially impaired children that she began to make progress. She was then four and a half years of age. She was in a kindergarten class and for the first time the child was with a group of people who understood a bit about the child's problems. She is quite interesting. This picture was taken in January of this year. Her speech now, three years later, is still for the most part quite unintelligible but it is not the usual problem because she did have before the onset of the illness at five a vocabulary and speech age of five and a half years. She had already developed a very good vocabulary and had formed concepts of speech and language before this illness developed.

Slide

Now I would be interested particularly if anybody has heard of the auditory hallucinatory phenomena in children which may occur with this type of auditory loss following infection.

There are three slides. I want to show them very quickly. This is a little boy whose three very good pediatricians, two of them friends of mine diagnosed him as athyroidism often observed as a mongol. When I saw him, this is the only picture we have; we don't have a picture of him as a baby. May I have the next one, you will see that if you look at him from the neck downward not his face, he has many of the bodily configurations that might be associated with mongolism although they are not typical. However, if you look at his face on the next slide you will see that he is not a mongol. This boy aroused the suspicion of people who sent him to me because they said we have a mongol with an intelligence quotient of about seventy-five. Of course, when I saw him he was not a mongol. It is possible to have mongols with intelligence quotients of seventy-five to eighty, but this was not one of them. Actually he was an unusual looking boy with none of the stigmata of mongolism. We found that he had a profound communication disorder and an intelligence quotient of seventy. The parents would naturally rather have this type of diagnosis than the stigma which they attached to having a child, who was a mongol. The child's father was a doctor. The reason I have shown him is that I do not know if he would not do better in life and get along better in life, if he were a mongol. He has a profound communication disorder and an intelligence quotient of around 70 and as far as I can see whatever we do for him he is in trouble with the combination of retardation and the profound communication disorder makes him much more difficult to place even later in life perhaps than some of the mongols we have. I have followed children with mongolism who are twenty and twenty-four that work in the community, live at home and live a happy life, go out and do jobs, and are almost self-sufficient. They are certainly very nice in the family. I am not so convinced that we will be able to find a job for the boy just described when he is sixteen or twenty-four in spite of all the efforts to be made in his behalf. Perhaps I am being too pessimistic and perhaps you can cheer me up a little bit about it.

These are some of the children which we see. We see all shapes and sizes. The EEGs we've done of these children, I think are very non-revealing. The electroencephlagram in spite of fifty years of intensive effort or thereabouts has never come of age and is not very helpful in an examination except in acute, cerebral disorders, such as brain tumors, brain abscesses, brain hemmorhages and occasionally an epilepsy. I would vouch in looking about this rooom that five people in this room have abnormal EEGs. I will tell you now that I have not had mine done in case I am one of the five. So you can have fairly normal people with abnormal EEGs and you can have very abnormal EEGs and can have very normal people. So the EEG, I have not found in these children of any particular interest although it is done on about 1200 cases. The usual story is non-specific slowing and dysrhythmia.

In London Dr. Worster Drought, an eighty-five year old friend of mine is still in very active practice and operates a school for the deaf. He has information on five or six children which he has not yet published who had a sort of mild, encephalitic-like illness where he found abnormal EEGs with abnormality in the temporal lobe. I have not seen these EEGs these children, lost their hearing for functional purposes and subsequently their speech so once in a while it may help to have EEGs confirm a diagnosis.

In conclusion, I would emphasize that the critical evaluation of what we try and do for the profoundly deaf child has to be continued. I think that many of the problems are medical and later on become psychiatric and medical. We read the reports of what happens to many of these intelligent youngsters when they leave school at sixteen and eighteen or leave college and learn that they become prey to homo-sexuality and other problems both in London and in New York, and other cities, because they have to have affection. They do not meet friends and the only way they often get affection is from abnormal and other perverse people. To be loved by somebody is preferable to not being loved or cared for by any body. I think one of the tragedies which worries me about the one hundred fifty years of education of the deaf up to the present is the fact that we are still isolating our children in schools for the deaf for so many years and the expecting them to cope with the world which is getting so much tougher to cope with for all of us. The deaf without the background of having lived in this world for ten years or something of this order then have difficulty adjusting.

I do not know what we can do to change it, and I don't think we have to change it but to me personally, it is a worry that so many of these people do not get jobs. The ones that get jobs, if you look at the Columbia Review, are the ones who are very brilliant and exceptional people that would have gotten jobs almost anywhere at anytime. Many of our children, of course, do not fall into this category so I do think that our social preparation of the child for the world outside has to be stepped up perhaps at the expense of trying to improve the quality of his speech or trying to improve other things which we consider to be of great importance during the school and academic life.

Trousseau, the Father of French medicine in many ways, said many years ago, "y" apau malady s'amiant malade" -- there are no handicaps only handicapped people. I think we tend to concentrate a little bit too much on the handicaps on occasion and not enough on the handicapped people.

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Robert Goldstein
Audiologist, Jewish Hospital
St. Louis, Missouri

AUDIOLOGICAL EVALUATION OF HEARING HANDICAPPED CHILDREN

There is an implication in the title of my talk that I will be discussing audiometric techniques. Actually I expect to talk more about some of the factors which will influence the mode of evaluation that we would do in a clinical situation and those things which will influence the interpretation of the findings. I will talk about the techniques just enough to introduce the topic.

I am more interested in your asking questions than I am in presenting a formal talk. I shall welcome interruptions at anytime during my presentation. A story which is quite appropriate in a situation such as this concerns the college professor who always introduced his class lectures with the remark, "You and I are here for different purposes today, mine to talk and yours to listen. If you get finished before I do, please raise your hand." So if I bore you to the point where you stop listening or if I mislead you anywhere along the line please interrupt me.

What I want to do is to present essentially a potpourri of ideas with some overlapping implications. You are probably aware how difficult it is to arrange a variety of ideas in a suitable sequence. Some things should always come first and whatever you have put last might have best come first, and would have explained the earlier topics.

I shall try to cover six general topics which, as I mentioned, have considerable overlap --

1- the basis for doing tests,
2- the concept of impairment versus handicap,
3- the multiplicity of handicaps and the multiplicity of clinical services,
4- counseling,
5- stability of findings,
6- the status of some of the current auditory tests.

I hope that these things will point toward the topic of the following speaker, Alice Streng, who will be talking about the implications for curriculum of some of the medical and audiometric findings that are reported. I will stick rather closely to a set of notes. I have a tendency to ramble and will try to prevent that. I wish I could be as nicely organized as Dr. Richardson was this morning. So just to keep myself in line I will refer to some of these notes that I have here.

The first general topic is the matter of what are the bases for doing hearing tests? I think that my being sandwiched in between Dr. Richardson and Dr. Streng is quite appropriate in this respect because the mode of evaluation is quite dependent upon the purpose. In other words, you can do a hearing evaluation to aid a physician in a medical diagnosis, or you can do an evaluation of communication to serve as a guideline for education or other therapeutic measures. Actually the tests that you would do for either purpose may be very similar; the main difference lies in interpretation. For instance, to an otologist you may wish to report that a hearing loss of certain magnitude exists and that there is a conductive component to the loss. To an educator you may wish to report that a hearing loss of certain magnitude exists and that it may be great enough to interfere to a certain extent with the child's ability to understand the spoken word or to develop his own speech. The tests may be the same but the results may be looked at differently.

The age at which you test a child has some influence on the kinds of hearing tests that you do. For medical purposes you can and should test a child of any age, and should use all necessary means to derive the essential information. For evaluation of communication function, two categories of children will probably concern you. First, there are those children who have suspected problems; these are the children who are referred in for evaluation. Then there are large populations of children to be screened for hearing problems. Screening of school age children can be of considerable value because as astute as parents and teachers are they sometimes miss some incipient hearing problems or other communication problems that can be picked up by screening tests. In certain areas in a given state one may find a greater prevalence of hearing loss than in other areas on the basis of heredity, because of certain socio-economic factors, or because of particular health factors which may lead to greater amounts of hearing loss or to specific kinds of hearing losses.

Currently there is considerable debate about the desirability of testing all newborns. Pediatricians have been wrestling with this question. Many of them feel that testing all newborns may be unreasonable partially because there are so few children who are born with serious hearing problems and partially because of the uncertainty of test results on young infants. The matter of the low incidence of congenital deafness is a fortunate thing. Other kinds of problems, however, may be picked up in a generalized screening program. These may be potential speech and language disorders because of some CNS impairment. The "high risk" or "at risk" babies, of course, should be studied. When there is a family history of hearing loss, maternal rubella, anoxia at birth, etc., the children involved warrant as early and as careful hearing tests as one can provide for them.

In summary then, one tests hearing for one of two major reasons or perhaps for both: to provide information to help establish a medical diagnosis, or to give guidance to an educator or other therapist. One can test in detail to give as complete information as is needed about a child's communication function or one may simply want to be involved in the screening aspects, that is, in a "whether-or-not" decision rather than "what kind" or "how much."

The second topic of general interest is that of impairment versus handicap. I think I can discuss this topic better with the aid of the blackboard than with words alone. You have seen the conventional audiogram blanks that will give the zero line here. Some of them are shaded around that zero line (+ or - 10 dB) to indicate the range of normality as far as what is expected in the total population; anything beyond a certain point the increased hearing level may constitute an actual handicap. That is, a child may or an adult may have difficulty in communication because of this particular hearing impairment.

These concepts seem simple but they can lead to some misinterpretation. If we are dealing with handicap, perhaps this concept of the normal range is a satisfactory one. If we are considering impairment this concept of a normal range may not be satisfactory. A child can show +10 dB hearing level in one ear and a -10 dB hearing level in the other ear. This child has normal hearing in both ears according to the concept of a normal range. However, we have a 20 dB differential, and because of our test equipment limiting us to a -10 dB lower limit even this differential may not be accurate. It is possible that the better ear has a -20 dB hearing level and that the child may have a 30 decibel differential between the ears. The difference may well be medically significant although there is no hearing handicap. Adoption of the so-called ISO (International Organization for Standardization) which sets a more realistic zero level (approximately where the current -10 dB is) will help considerably in the assessment of impairment. This will, of course, shift the level of what we think of handicapping, say from 25 dB down to 35 dB, but that is simply a shift of numbers. The physical stimulus that is applied will still be the same. However, when a child with a 10 dB hearing level by current standards now shows up with what is approximately at +20 dB hearing level, people will look at this child a bit more seriously from the standpoint of impairment and perhaps institute some kind of treatment.

The new ISO Standards will have implications with regard to placing children in schools for the deaf. Professional workers are going to have to readjust their thinking when it comes to evaluating audiograms in terms of special education. Certain key figures have been used as guidelines for educational placement. Ignoring differences in audiometric configuration and other possible communication problems that a child may have, we are accustomed to saying that when the hearing level in the better ear is 30 dB or worse, the child will have some difficulty in communication which may need some attention; with a 45 dB hearing level me may need a hearing aid and he may have to be in some special class or may need some additional help beyond his regular classroom work; by 60 dB, according to some people, he should be placed in a school for the deaf, etc. You must remember that this whole scale is going to be shifted by some 10 decibels and with it has to shift our thinking. Although a 60 dB level will now be approximately 70 dB by ISO Standards, the actual sound pressure level will still be the same. The child's problems will be the same. It is only our way of looking at the numbers that must change. I just called this to your attention because this will become a problem of interpretation in the relatively near future.

The third topic is the one which Dr. Richardson touched on so very well this morning, and that is the multiplicity of handicaps and the multiplicity of services that are needed to evaluate the handicaps and to render the required therapeutic services. The problem of multiplicity has become so great that many of us who have what might be considered a single speciality such as audiology, or speech pathology, or psychology realize our inadequacies. In other words, it takes more than a specialized view to come up with a thorough picture of a child's problem. The term "communicologist" has been suggested for people working in the broad area of disorders of communication. This term is either welcomed enthusiastically or else it is rejected with disdain. Whatever we choose to call ourselves as professional workers, we have to realize that no one of us has the total skills to provide a total and adequate evaluation. We do encounter communication problems which either singly or multiply can mimic deafness; and when we consider the testing of very young children, I would defy anyone to make a statement with complete certainty that deafness or any other communication disorder is the sole problem. We do not know, for instance, that a child who is so emotionally impaired that he is in serious psychic trouble will react normally to sound and perhaps his lack of reaction can mimic deafness. Is he mentally retarded? Does he have the central problem that comes under the categories of aphasia, agnosia or central auditory imperception or whatever the particular term? We have to be able to assess all of the factors contributing to a communication disorder and which of them are the most significant for the particular child involved.

We must also evaluate the interactions of the various components of the disorder. A hearing loss in the mentally retarded child assumes much greater importance than the identical loss in a child with normal intellectual function. Two children with approximately the same audiogram may be handicapped differently if, for instance the ears of one child may introduce more distortion in the signal that reaches the brain. In one instance, a child may be able to sort through the imperfect signals and develop reasonable speech and language commensurate with his auditory sensitivity. In another child the distortions being fed into the brain, (I am not saying imposed by the brain) may be of a different nature or of a more severe nature so that this latter child is not able to synthesize the imperfect signals that he does hear into an intelligible message. He becomes more impaired even though his sensitivity may not be more impaired.

We have to be concerned with the social factors, family situations. Given two children with equivalent or even identical auditory sensitivity, stimulation provided by one family can be considerably different from the stimulation provided by the other family; and so the hearing loss assumes a different proportion in one child than it does in the other.

Even teachers contribute to the total picture. A child's problem may be diagnosed in a particular way and the child then sent to a teacher who is supposedly competent to work with his problem. When we re-evaluate the child several years later, what is he like? Is his present condition solely due to himself, to his own organic problems, or can it be related to the way in which the teacher has handled this particular child? If he had been sent to a different kind of teacher, might his present manifestations be considerably different?

We have often been quite critical of diagnosticians. Diagnosticians in one center are critical of diagnosticians in another center. One center may have seen a child at a very early age made a referral on the basis of their best judgment for a particular educational approach. In the educational setting where the child is being taught there may also be a diagnostic center and the diagnostician sees the child under different circumstances after teaching has gone on for some time and he sees an entirely different child. Was the original diagnostician wrong or are there additional factors that have to be taken into account?

A major task, therefore, is that of sorting out all of the problems, the hearing loss itself, the variations just of the hearing loss, the multiple handicaps, the interaction among these and the ways in which the child has been handled. No one person can really assess these adequately, therefore, we need a multiplicity of services to accomplish the task. I will go along with Dr. Richardson's skepticism of the team approach. I would like to quote something (I do not know that I am quoting it precisely) to the effect that "Search all of your parks and your squares in cities throughout the country and you will never see a statue erected to a committee." Now this is true. Group action can bog down particularly when some members of the group are weak. Yet interaction among specialists is essential unless one person has the exceptional ability to handle the whole picture himself. Any team requires the medical specialist as well as the communicologist, among the medical specialists three are of particular importance; the pediatrician, the otorhinolaryngologist (I put the nose in here because it often contributes to the child's problems) and the neurologist. This does not mean that other physicians and other specialists cannot be involved or that the general practitioner cannot be involved, but at least these three, or their equivalent skills are essential: pediatrician, otorhinolarynogologist, and neurologist. Because we have to look not only at the hearing per se for instance, we may need the otologist's or neurologist's evaluation of vestibular function and whether the child has additional central nervous system problems that may be compounding his difficulties based on the hearing loss.

For the evaluation of the communication disorder itself we need the audiologist, the speech pathologist, the teacher of the deaf and other special educators, the psychologist, and the social worker. It is often desirable to have teachers, psychologists and social workers who do not work exclusively with the deaf or with the hearing impaired so they can bring a little different view of the world to the total evaluation. Those of us who work strictly with deaf children or with speech defective children have tunnel vision; we tend to see things in only one light and only in terms of our particular experience. In any mutiple approach we need people who work with children with other handicaps and with normal children.

Audience:

Question concerning nurse

You are right. The nurse is very important. We are presently engaged in working with some of the out-state areas of Missouri and, frankly, it is the public health nurse who has taken the most active interest. We had depended upon people in education, in audiology and speech pathology, and in medicine, to detect, to call attention to problems, and to instigate action. The children that we have seen would not have been served in most instances had it not been for the nurse who started the action and followed it through. Please accept my apology for the inadvertent omission of the nurse from the team.

The fourth aspect to be considered is the matter of counseling, counseling following a total view of a child. Again, even though we have no statue to our committee we need at least a committee evaluation. If we have a team approach we must have, as Dr. Richardson pointed out, a very strong captain or quarterback who brings all of the ideas and other people's findings together and sees that action is taken.

Of course, the physician has to be involved in this as much as the communicologist. I think we have too long neglected the physician or the physician has too long taken himself out of the picture. I think both have been guilty. I think a group decision is partially necessary to point out what is the primary problem facing the child, and then from that team the person who is most involved in this kind of problem would be in the best position to handle the counseling. Very often the counselor is not the audiologist or speech pathologist or the physician. The social worker or the nurse may be the best person to counsel and to follow-up on a particular problem.

I would like to cite just one instance that we encountered recently which points up the necessity for many people evaluating a particular problem and in following it up. We saw a fifteen year old child who is the oldest of five children in a family who are very defective, the parents and all the other children. This child has facial paralysis, poor speech and poor understanding of speech. She looks like a pretty miserable, dull child. After an evaluation by our professional team we came to the decision that she was not quite so dull as she looked. The shocking thing was to have the otorhinolarynologist take a look in the ear on the side of the facial paralysis and to find no tympanic membrance and to find evidence of long-standing infection with almost a certainty that the infection eroded the facial canal and brought about a facial paralysis. This is tragic enough in itself but I venture to guess, although I am not a physician, that this child will end up with some kind of a cerebral abscess if the erosion of the middle ear is allowed to proceed.

We need to do more than simply look at the children and evaluate them. We need the follow-up. We need the medical follow-up. Both evaluation and follow-up are very important and I hope that in any setting neither will ever be neglected. There is also the problem of the practicality of the counseling that is done after all examinations are made and everybody has put heads together and picked out the captain of the team to do the counseling. We have to decide what can be done, what facilities are available, of course, this will again tie in with some things that Miss Streng will have to say. We have to decide whether taking one course of action to the necessary neglect of another will lead to more problems or to less problems. We have to decide whether taking one course of action to the necessary neglect of another will lead to more problems or to less problems. We have to decide how certain we are in our evaluation, with how much certainty we can counsel the parents and guide them into particular courses of action.

The fifth general topic is that of the stability of the findings. This also affects the certainty of the counseling. We do know that in certain children that hearing can deteriorate from a normal or near-normal level. Many studies have been done on animals showing certain breeds, certain strains of animals that are born with essentially normal auditory function, normal observable auditory structures, which will degenerate within a short time after birth, and the animal becomes completely deaf. I am quite certain that this happens in many children. I say this on the basis of some clinical experience and on the basis of what I have heard and read of others. We often malign parents who bring in a child at 18 months, a child that is obviously deaf. Why in the world couldn't the parents see this? Why couldn't the pediatrician have seen this? And yet, the parents insist that the child had hearing. We say that the parent is not very observant. I am quite certain that there have been many cases of deterioration of hearing which was either normal or close to normal. In some children it deteriorates at a rapid rate, in other children very slowly.

What happens when there is deterioration? In any active lesion of the ear, of the sensory structures or the neural structures, there seems to be more distortion of the auditory signal than when there is a stable pathology. We have an example of this in the development of tumors of the eighth nerve where auditory sensitivity in some instances has been completely normal and yet a patient will say, "I cannot hear anything in this ear." We test the sensitivity to pure tones and the audiogram shows normal sensitivity; we test the patient's ability to discriminate speech and there may be no discrimination for speech. A significant discrepancy exists between the sensitivity and the ability to sort the sounds, the distortion is very great. With an adult we can do many laboratory radiologic and other studies that will point to the development of a tumor, assuming that a tumor is developing. But suppose we have a child with a degenerating nerve, not a tumor. The child has no pain, and has no particular complaint, and yet the child does not understand what is said. Now you start to get the classic symptoms of what we have called aphasia in children: normal sensitivity or close to normal sensitivity, apparently good intelligence, no particular behavioral aberrations and yet the child cannot seem to understand what is being said. So at an early age a diagnosis of aphasia is made. I am sure that I have made it and I will probably make it again if I would see a child under these circumstances. When we see the child at a late age, this child is as deaf as can be, learning speech and language by good methods for the teaching of the deaf, and showing no other kinds of problem that would be presented in aphasia. These things have to be taken into account both in the tester's evaluation and in the counseling that is given. Careful audiologic follow-up has to be done.

Sometimes one sees improvement in hearing in later tests. This may be due to resolution of a middle ear disease. Sometimes a child becomes a better listener. As Dr. Richardson pointed out even though the auditory sensitivity may not change, the child does change and some children do become better listeners. They seem to be hearing better. This phenomenon has to be taken into account because a child may be on the borderline with regard to placement in a special class with hard of hearing children or in a class with hearing children. Sometimes one child in the course of his evolution will do well enough with his listening to push him above the line whereas, another child will fall below that line. All possible factors have to be taken into account before recommendations can become final; and after they have become final, the child should be evaluated at a later date.

Maturational factors must also be taken into account before final recommendations are made. We have heard in the past the promise of pediatricians that a child will "outgrow" his problem, and we still hear it today. Of course, we see the children who haven't outgrown their problems. We don't see the children who have so we assume that the pediatrician is always wrong when he says the child will outgrow his problem. The pediatrician may be very right and the child may outgrow his problems but I suppose with our great zeal to test all children, and to test them at an early age we come up with the decision that a child has a problem. We begin paying attention to his problem, giving therapy, getting the family concerned and involved and we may possibly be creating more problems than less problems. Now from my own point of view, I would still rather take the chance of erring on the side of claiming that a problem exists and of giving nature a helping hand through therapy that may not necessarily be warranted. We must recognize, however, that certain things do resolve themselves. I do not mean there was never a deficit, but whatever deficit there may have been has resolved itself or is now so minimal a deficit as to be undetected. Somewhere along the line we have to reconcile our fear of missing a child who has a problem with our fear of creating a problem by an improper diagnosis. We need some kind of clues, more objective clues than we currently have to help us to determine whether a child with an apparent communication disorder is in the process of maturation, or whether the child has a real pathologic problem that will resolve itself only partially or not at all.

So far I have purposely talked about everything but hearing testing per se because I felt that the background at this time is important. What is the context in which you view hearing tests and what is the information you get from them? Nevertheless, we still have to evaluate hearing, and despite our skepticism about the omnipotence of the pure tone audiogram it has great value as a criterion for educational placement. It may even be the most important single criterion, recognizing fully that it is never to be the only criterion for any educational placement. Sometimes only one audiogram can be done before a decision has to be made. Some people who are very skeptical of a single audiogram to the point of saying that one audiogram is worse than none. I disagree rather strongly with this view. The implication of that statement that one audiogram is worse than none is that there is no relation among children who have been studied sequentially between the initial audiogram and subsequent audiograms. There is little justification for this concept. If an audiologist is skilled and is objective and can state the limits of his certainty then an audiogram taken one year later on a given child, made with equal reliability probably will be very close to that initial audiogram providing there has not been resolution of a disease existing at the time of the first test or further degeneration of the auditory system. We should have follow-up audiograms, we should have many audiograms, and we should have audiograms done by many techniques. But as educators you may be faced with the problem of having just one audiogram of the child and you maybe have to make a decision based on that single audiogram. The decision may have to be based on that audiogram and the confidence you have in the audiologist and his report. It is certainly true that audiograms cannot be determined reliably on some young children. If the audiologist is not confident of his audiogram, he should clearly state his reservations and the educator will have to act within the limits of confidence that are given to him.

Initially we may be restricted to screening procedures but the time comes when we have to do formal behavioral audiometry in which we try to condition the child in the way we would condition an adult, to respond to the sound when it is presented. We find that we can test rather young children three years old and some even younger, by essentially the same techniques that we would use with an adult. Yes, a child will tire more quickly and you may have to work with him on several occasions before you can establish reliable thresholds. However, you can work with many young children by simply having them raise a finger in response to sound without any complicated games, toys, pegboards, peep-shows, etc. Treat them as adults first, treat them as simply as possible. When you expect certain performance from children you are apt to get the kinds of responses necessary to obtain a reliable audiogram. When simple conditioning techniques do not succeed, you may then have to resort to more complicated procedures. You may have to use the peep-show although, generally, I think you will find that children who cannot perform the other simpler tasks, do not do particularly better with the peep-show. You may find the peg-board type games, putting rings on a peg, dropping a marble in a box, etc. very useful to condition the child to react.

If you are faced with the very young child, the recalcitrant child, or the stupid child that cannot follow instructions, either simple or complex, then you have to look for overt responses that are essentially unconditioned or unlearned, the startle or alerting reactions that a child may give you to stimulation. Of course, the area or zone of uncertainty is greatly enlarged in these cases. You may not be able to be within + or - 5 dB, or even + or - 10 dB of the actual level. You may have a range which is twenty or thirty decibels wide. Even with a wide range around threshold you can still begin to form an impression of the child's problem. He may be in the category where impaired auditory sensitivity does not seem to be the major factor, or his loss may suggest the need of some special help or perhaps amplification, or his loss may be great enough to suggest an intensive program in special education. On follow-up examinations when the child is older you can do more sophisticated tests; thresholds will generally be found within the zones estimated on the original tests. You may have originally estimated a hearing level between 30 and 45 dB; the follow-up test may show a reliable 30 dB level which is still within the zone originally estimated.

Before going on to matters of the electrophysiologic audiometry that Mr. Hartwig mentioned, I would like to discuss the terms "objective" and "subjective" which frequently appear in the audiologic literature. Any kind of a test in which you call upon the patient to react on the basis of what he hears is considered a subjective test. You tell this person that when he hears a sound he is to raise a finger and when the sound goes away he is to put the finger down. His reaction or his response is a subjective one. In the test situation you have a patient with his back turned to you. You press your finger on the interruptor switch presenting a sound to the patient and the patient puts his finger up. You release the interruptor switch, the sound goes away, and the patient's finger goes down. You do this several times and then you reduce the intensity of the stimulus until you find a point below which the patient does not put his finger up when you press the interruptor switch. You increase the strength of the sound and the finger goes up. You have a subjective reaction but you have a very objective test because of your control of the total test situation. There is nothing subjective about this particular test, especially when it can be borne out by other kinds of tests. You may have a very objective test based on a subjective reaction. You have no guarantee that you will have an objective test but a skilled audiologist can very soon spot the person who is not cooperating appropriately and not giving the proper kinds of reaction.

Now, by contrast, you wire somebody up for electrical reactions from the skin or from the brain. You watch an ongoing chart, present a sound and note a change in that chart. You have an objective response because the patient has no control over it and, therefore, you say you have an objective test of hearing. You do not have an objective test of hearing at all at that stage. The tester is very much involved because of his subjective evaluation of the electrical tracings. Let us suppose that the tester is watching the electrodermal tracings. When sound is presented to the patient the tester may see a large reaction, or a small one, or none at all. The reactions or responses may look very much like random changes in the ongoing record when no sound is being present. How much confidence does the tester have in evaluating an electrodermal change as a response? Suppose he sees only a small change but one which is appropriately timed with regard to the stimulus. It is probably that the tester has seen this child before, this is not the first test he has done with the child. He has borne some idea in his mind as to whether this child should or should not be able to hear at a given level. If he thinks that the child may have good sensitivity, then he may give credence to small electrodermal change that he sees. If he is skeptical that this child has good auditory sensitivity, he may regard that change as a random reaction. The same could be said of evaluating changes in the EEG in response to sound. Anybody watching the ongoing record, particularly of a child, will see all kinds of varying activity, especially if the child is asleep; and any change can be seen or imagined at any time if the tester expects a response.

In order for electrophysiologic audiometry to be objective, the tester himself must be objective. He must have a systematic way of presenting stimuli, of coding them, and of judging responses without knowledge of the stimuli so that not only will he have an objective response but also have an objective test.

Let us suppose now that you are testing a child with a play technique such as having the child place rings on a cylinder or peg as a mode of response. Everytime the child hears a sound he will drop a ring on the peg. You have objective control of the situation and you come up with an idea that this child has a 65 dB hearing level at 1000 cycles per second in his left ear, plus or minus five decibels, and you have a fair amount of confidence in your electrical changes during electrodermal or electroencephalic audiometry, you will come up with the same 65 dB hearing level. You do not find a discrepancy between the two tests. You may find a greater range of certainty (or uncertainty) and maybe one test will give you more precision than the other.

The electrodermal or the galvanic skin response has been used rather widely in audiometry in the past but currently it seems to have reached a low point as far as general clinical acceptance is concerned because it seems to work least well in the children who need evaluation most. The very young child gives poor responses apparently because his autonomic system is not as reactive or the manifestation of his autonomic reactions are not as clear. The child who may have some central nervous system impairment, who is difficult to test by ordinary techniques, may also be less reactive electrodermally. The child who is hyperactive, who will not sit still, who will not keep the electrodes on, naturally is very difficult to test. If you do sedate him you also reduce his electrodermal reactions. Clinicians have become a little more enamored with the EEG because it gets away from some of these problems. You can test children of any age, sedation is not a particular problem, and if the child is uncontrollable you can have that child asleep. This does not mean there are no problems with EEG. You will find some children who are not particularly reactive and you may find difficulty making a judgment as to whether a response has occurred.

A major problem with electroencephalic audiometry is that responses may be very small while the background EEG activity is usually quite large. Electronic techniques have been devised whereby small responses to repeated stimuli can be made more obvious. With a so-called average response computer tiny responses can be added up to give a larger composite response while the larger background activity is averaged or canceled out. It does present possibilities that the straight forward EEG has not been able to give that is, pick out the tiny response to repeated stimulation. But if it did only that, it would not be worth the investment. It is only a small percentage of children on whom you cannot get some estimation of auditory thresholds by one technique or another. The thing that Dr. Richardson said this morning and the thing that we have to stress now is that the audiogram is only one criterion for educational or other therapeutic recommendations. What we hope will emerge from the average response computer are patterns of responses or patterns of responsivity that may be different in different categories of children. We would like to be able to say not only that a child has a threshold of such and such but the pattern of his responses suggest that he may have a central problem of a general or of a specific nature. Tests of this sophistication are still in the future but work in this direction is part of our research effort.

Ideally, we would all like to do things the way that Dr. Richardson has suggested. We are trying in our own program at The Jewish Hospital of St. Louis to have as many specialists involved with a particular child as we can. Despite the best team effort, however, the problems of some children continue to remain a mystery. Still we cannot always wait months or years for the disorder to present itself in a clear picture. We cannot always wait to see what happens after the teacher has worked with a child because we may have mislead the teacher on the basis of limited information and the teacher will just simply be compounding our errors by handling the child in the wrong way. So we do need some kind of a short cut, some kind of a supplement to help us to predict in advance what may be wrong with the child so that we get this child off on the right foot a lot sooner than what we do now. We do hope that our electrophysiologic tests will provide us with some of the early clues that we need. We hope, also, that research along other dimensions of auditory behavior will further strengthen our diagnostic battery.

I have given you a mixture of ideas as I said I would, literally a potpourri, and within each of these segments a potpourri of related material. Hopefully, my talk will give you a starting point for your own discussions. I will certainly welcome any questions at this time.

Audience:

Term congenital aphasia --- language disturbed

The concept of congenital aphasia is a valid one but the abuse or misuse of the concept and the term has led to serious confusion. Let me review briefly what I believe the history of the situation to be. Mr. Hartwig and I were at Central Institute for the Deaf at the time when the term congenital aphasia was just not acceptable anywhere else. We felt that of children that we had been seeing clinically, a certain number would clearly fit into this category. We and others at Central Institute became enthusiastic and waved the banner of Mildred McGinnis and her concepts of congenital aphasia. (We even spoke in Cincinnati some ten years ago if I remember rightly). People began to accept this diagnostic concept. Then both parents and diagnosticians began to abuse the concept and the term, parents because it gave them an out for something that they did not want their children to have labeled such as mentally retarded, and diagnosticians because it gave them a chance to be a little bit lazy. Any child too difficult to evaluate could be classified as aphasic. Teachers were guilty, too. The child who was too difficult to teach by ordinary methods was claimed to have had a language handicap based on a central nervous system lesion.

I think that the criteria for congenital aphasia still holds. They are based upon discrepancies rather than on positive indications. A great many diagnoses are made by exclusion. It is not the best way to make a diagnosis but sometimes it is the only way it can be done. The child seems to have appropriate auditory sensitivity, adequate intelligence, good behavior with social interaction and still has not developed language. He may or may not in his history have something to suggest a central nervous system lesion [illegible] this would be the basis for calling a child aphasic or whatever other word is used to describe the inability to develop language even though the peripheral tools and the other tools are present.

A question is how often does this kind of condition occur? I have been asked this question so I will anticipate a question now and ask it of myself again. I cannot give you a numerical answer but I can consider incidence on a comparative basis. I think in many, many children that we see with or without hearing losses, children who have difficulty with communication, there is some central nervous system dysfunction that may involve the auditory system along with other systems. Perhaps it involves the auditory more than others but we do not know for sure. Ordinarily we talk as did Dr. Richardson about three senses: the tactile, the visual and the auditory. We do not expect a young child to distinguish words visually. We do not expect him to give us much information about his tactile sensation but we do expect the child to react to auditory stimuli, to our voices, and to develop speech of his own. So we look for the obvious deficit but we do not know that other deficits are not present. The child may have overall problems but the auditory becomes the most obvious. Perhaps the auditory is more involved than others but I do not actually know this. I would suppose, though, with the young children that have communication problems covering the whole variety that there are many who have central problems involving the auditory sphere. Whether or not we are justified in calling them aphasic is another matter.

I would think there are fewer children who have a very definite organic problem with the central auditory system, in which the central auditory pathways are distinctly more involved than other pathways. I am not a neurologist but I find it extremely difficult to think that only the radiations from the medical geniculate body to temporal lobe could be affected, or that only the cochlear nuclei of the brain stem could be affected without affecting anything else, or that only the trapezoid body could be affected without disrupting the vital respiratory mechanisms of the child. Nevertheless there is a possibility that in some children there is a greater damage to the auditory system than to other systems. And then there are the rare children who have an exclusive auditory problem, and these probably could be diagnosed as aphasic. Therefore, if I were to plot on a comparative basis the distribution of children with problems other than or in addition to deafness, one would find many children with auditory dysfunction being one part of a larger central nervous system problem, perhaps one-tenth as many children, maybe even fewer than that, in which the auditory dysfunction is the primary central problem, and only a rare child with an exclusive central auditory disturbance which could be classified as aphasia.

I think that it is so important that we look at so many aspects of the child in order to determine whether or not we are dealing primarily with an auditory or with a more general disorder which includes the auditory. Perhaps it has been the failure to take a many-faceted look at children with communication disorders that has led to the "epidemic" of aphasia that you say has been sweeping Ohio.

Audience:

Auditory Sensitivity

I have preferred to use "auditory sensitivity" rather than hearing loss or hearing level. Really I should say "threshold" of auditory sensitivity. Auditory sensitivity could be the same thing as hearing loss, but we seldom know whether it is loss or not. Incidentally, I do not like the term "hearing level" because of the implication levels of function.

Audience:

Hearing loss cut off at 60 decibels for educational classification of deafness. Will it remain the same with the new ISO Standards?

Only if you believe that the current sixty decibel cut-off point is a valid one. If you believe that it is still valid, then the change to the ISO Standards has no effect on it whatsoever. It will simply shift the number down an average of 11 dB, so instead of 60 dB it will be 71 dB. It just means a shift of records but not a shift of policy.

I think that new ISO Standards will be adopted universally, and I think they should. Too many incipient medical problems go undetected with the current ASA Standards. That is my argument against giving the range of normality when one has an unrealistic norm.

Audience:

Skills of audiologist - Can he make appropriate educational recommendations on the basis of his tests?

We refer children to an education facility for them to make the final decision about educational management. Regardless of what the precise hearing level is we would still refer to the educational facility for them to make the placement. Sometimes, however, we have very close liaison with an educational center and know its way of thinking. Then we may be in a position to counsel the parents in the same way that the school would have counseled.

Audience:

Referral of children in special classes on the basis of hearing level.

I do not wish to be evasive on this point but I do wish to stress again that more than knowledge of hearing level is essential for proper educational placement. In addition, we may have to talk about a range of values rather than any fixed level. Sixty decibels is still a key point. If the hearing is better than 50 dB it is my feeling that the child probably can get by when he has other kinds of help without full time intensive education in a school for the deaf. When the hearing level is between 50 dB and 70 dB, then one must take into account the configuration of the audiogram, whether the hearing loss is congenital or acquired, whether potential for speech discrimination is good or bad, etc. We must also take into account intellectual capacity, social and economic factors, and community resources. When the average hearing level is 80 dB or greater, then full-time education as a deaf child seems mandatory, assuming that there are no significant complicating factors.

Audience:

Averaging out an audiogram

In general one cannot use the three-frequency average (500, 1000 and 2000 cps) except for the u-shaped and flat audiograms. In the majority of deaf children the high-frequency sensitivity is very much poorer than the low frequency sensitivity. An average of the two better frequencies (usually 500 and 1000 cps) gives a better indication of the child's potential for utilizing his residual hearing. Some children have distinctly better hearing at 250 cps than at 500 cps and seem to understand speech better than could be predicted from either a two-frequency or three-frequency average.

Audience:

Criteria for placement of children with hearing levels between 60 dB and 80 dB.

Again I would have to go back to the potential for this child to discriminate speech on the basis of some tests if the child is old enough to test. The better his discrimination, the better the chances for successful education with normal-hearing children. We still have to ask whether the hearing loss is progressive or stable, and whether it is recent or of long-standing. We must know the intellectual capacity of the child, the family situation, the stimulation this child receives. These are really non-audiologic criteria but they become every bit as important as the audiogram. The audiogram should never be used as the sole criterion.

Audience:

Battery of tests (how the child functions - regardless of loss). How can you define this in terms of standards? What criteria can you set? Why should two different reputable centers come up with a totally different diagnosis on a given child?

I would question the validity of at least one of the centers, not its reputation.

I don't think that either Bill Hartwig or I would say, "Do not pay any attention to the numbers on the audiogram." Rather, we would say, "Treat the numbers on the audiogram in context rather than as exclusive criteria." I would have no hesitation whatsoever, barring very severe aberrations in other categories of functions, in making a recommendation to a school for the deaf or classes for the deaf for the child who has a hearing level of 70 dB at 250 cps, 90 dB at 1000 cps, and no responses at 2000 cps. But if this child also has a severe intellectual problem, or if the psychologist and the psychiatrist has reason to question this child's emotional integrity, I might consider other educational or therapeutic recommendations.

Audience:

The gray area - compromise of all areas involved

Let me make one comment here that may offend or may not offend some people. When a discussion or an argument rages it often concludes with the statement that there are always two sides to every question. I disagree with that statement for there are rarely only two sides to every question, rarely a simple dichotomy. We have to recognize your dilemma, which is a serious a very practical dilemma. You must have a definite "yes" or "no" answer to the question of educational placement, and yet I do not know of any dichotomous set of criteria.

I think the teachers in the various school systems, their principals, the supervisors, are really in the best position to establish criteria. A certain amount of experimentation still has to go on. We do not have the answers. One cannot always have the ideal laboratory for his experiments. What we need is a deafness placement computer.

Audience:

Dr. Richardson's question (differentiation)

My concern about the use of the term aphasia is that it is primarily a behavioral classification and done largely for educational purposes. If there is a modification of behavior, the previous description can or cannot stand and it really does not trouble me too much as long as the child's behavior is being altered, hopefully appropriately, although in this situation you describe one would wonder. The person who has an 80 dB hearing level, born with this amount of hearing, then learns to function and to understand speech through amplification moves out of the realm of the tradional definition of deafness, which is the inability to understand any language through the spoken voice alone. Now is the person deaf or is he not deaf? He has the same amount of hearing now as he had before but he has considerably different use of it.

Let us get back to the term aphasia. Neurologists have had very fascinating arguments against this term for children. To me the prefix "a" does not mean the "loss of," but the "absence of." Let us look at the word "atheist." It could mean a person who once believed in God but no longer believes in God, or it could apply equally well to a person who never believed in God. Even though the term aphasia grew up around the adult, most aphasic adults really should be called "dysphasic" because there are not many of them who have this total absence of speech or of language. It is the child who is aphasic, and the term actually is less appropriate for the adult. The child and the adult are different but so are the congenitally deaf, and the adult who suddenly loses all of his hearing. They are both functionally deaf, yet, they are both very different kinds of people, and yet the term deaf is appropriate for both.

C

Alice Streng
Director of Special Education
University of Wisconsin
Milwaukee, Wisconsin

AUDIOLOGICAL EVALUATION OF HEARING IMPAIRED CHILDREN

Introduction

When teachers of the deaf read the summary and recommendations on the education of the deaf in the report to the Secretary of Health, Education and Welfare they will undoubtedly be struck by its first sentence. I quote, "The American people have no need to be satisfied with their limited success in educating deaf children and preparing them for full participation in our society." This hundred thousand dollar study merely substantiated what most educators have long suspected. We who deal with the deaf know that their academic achievement is generally low, that their work records, while they are good individually, present a picture of underemployment, that they are a minority group socially, that they are perhaps less mature as a group and that there are many psychiatric, and mental health problems among them. We must begin to look at our products as adults, in order to establish criteria for what we are doing in our schools for the deaf.

At a recent meeting of vocational rehabilitation counsellors which I attended it was the teachers of the deaf who were sternly taken to task for not doing an adequate job in preparing deaf youth and adults academically for the world of work. While these counsellors may have a prejudiced view of what goes on in schools for the deaf, we must acknowledge that there may be a grain of truth in their indictment.

The burden for improving the status of the deaf seems to fall directly on the schools. The problem is very complex and multi-faceted and perhaps one that only the wisest could ever solve. It will take the concerted efforts of everyone, physicians, audiologists, parents, teachers, and administrators working together to find the solution. This conference is evidence that at least the State of Ohio is ready to devote its entire resources to achieve cooperatively a comprehensive plan to improve curriculum and program in order that more deaf children in its schools will have a better chance to succeed.

Not long ago Dr. Richard Silverman of Central Institute for the Deaf remarked in a talk at the 50th Anniversary celebration of his school that no longer were they at C.I.D. going to try to make pronouncements but that they were first going to try to ask the right questions. In our discussion of curriculum and program, perhaps we too could start with asking ourselves some questions. We might well begin with talking about the aims of education in general even before we talk about educating our deaf children. What do we expect from education? Knowledge is increasing at a fantastically rapid rate. Man is on the way to the moon; kidneys have been transplanted from one person to another; man has developed robots which are almost, but not quite, as intelligent as he is. However, all the knowledge that we gain about how things operate cannot be the ultimate knowledge we seek. Everybody cannot learn all there is to know. Perhaps the best we can do is learn to learn, and to teach our children to do so too. Unless the educative process includes an understanding of man as a social being in a restless world we have not achieved our goal. John Goodlad puts it very succinctly when he says, "Some men pronounced learned cheat because they are vain; some men pronounced holy steal because they are greedy; some men pronounced wise kill because they have established no identity with their fellow men. The people who may soon bring down a holocaust upon themselves are or will have been the most educated of all."

We must set our expectations for deaf children at a level which will allow them to function in this increasingly complicated mechanical world with its increasingly difficult problems of personal and vocational adjustments. But we face a major road block in this process by virtue of the lack of ability of the deaf to communicate at a level which will enable them to participate fully in the world dominated by the spoken and written word. Some questions which come immediately to mind are:

1. Who are the children attending our schools for the deaf and what are their characteristics? How does this influence curriculum and teaching?

2. At what age shall we begin educating little deaf children?

3. How shall we deal with the baffling problems created by multiple handicaps?

4. What is being done for our talented deaf children?

5. What plans should be made for adult continuing education beyond the job training aspects?

6. What is the status of vocational education in our schools?

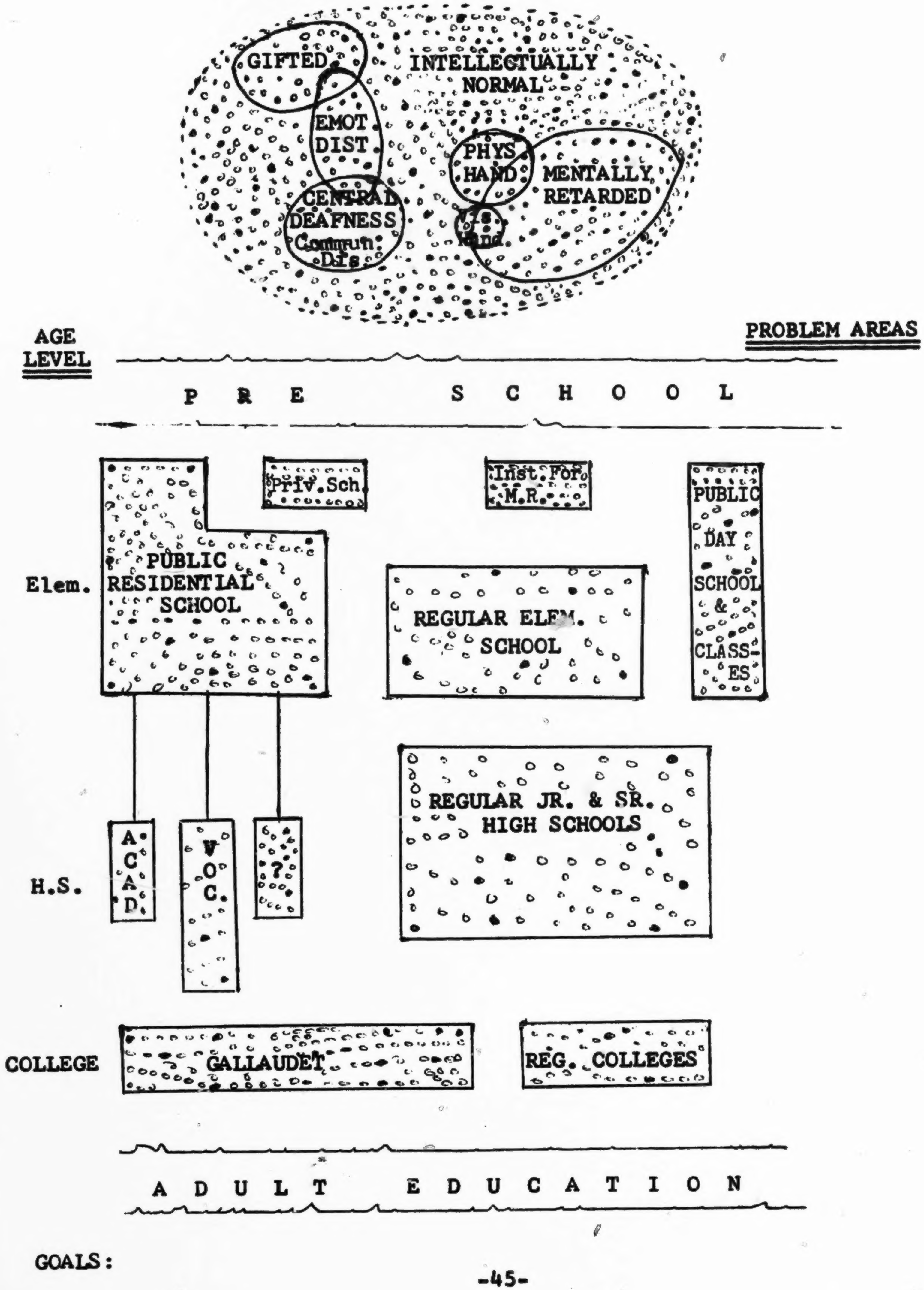
7. What constitutes an adequate curriculum for deaf children?

8. How can we speed up language learning so that deaf children may become better academic achievers?

If we were to gather up all the children in the United States who attend schools for the deaf we would note that they varied in age from about three to twenty-one, in intellectual capacity from meager to great, in ability to hear from almost none to quite a bit, in emotional adjustment from poor to excellent and in ability to learn language from little to normal. Moreover, many of these children would also have imperfect vision and would show neurological or physical structural abnormalities and might even have combinations of any of the traits mentioned. At the top of the accompanying chart this total population is represented by dots of various sizes and configurations. The solid dots are the deaf children whose language problems stem largely from early severe deficit in hearing. The half-solid dots represent those with some trainable residual hearing. The others, those with considerable hearing who seem to have more the characteristics of the children who are hard of hearing are represented by the hollow dots. An attempt was made to show how this population might be subdivided into groups and how these groups intersected. Since it was not possible to show all intersections the diagram is merely an abstraction of an abstraction. (SEE FIGURE I)

FIGURE I

IDENTIFIED POPULATION OF HEARING IMPAIRED


GIFTED
INTELLECTUALLY NORMAL
EMOT DIST
PHYS HAND
MENTALLY RETARDED
CENTRAL DEAFNESS
Commun Dis
Vis Hand
AGE LEVEL
PROBLEM AREAS
PRE SCHOOL
Priv. Sch.
Inst. For M.R.
PUBLIC RESIDENTIAL SCHOOL
PUBLIC DAY SCHOOL & CLASSES
Elem.
REGULAR ELEM. SCHOOL
REGULAR JR. & SR. HIGH SCHOOLS
ACAD.
VOC.
?
H.S.
COLLEGE
GALLAUDET
REG. COLLEGES
ADULT EDUCATION
GOALS:

You will note that the group of mentally retarded is quite a large group. Mr. Ray Horn indicated to me that about 40% of Ohio children have intelligence quotients of 89 and less. Dr. Hugo Schunhoff, Superintendent of the California School for the Deaf at Berkeley reported in 1964 that 12% of the population of his school was considered above normal, 45% average, 32% slow and 10% mentally retarded but educable. Compared with the estimated 3% of mental retardation in the normal population we notice that the figures for the deaf are more than doubled in these two instances. While we cannot generalize to all schools it would not be surprising to find the same situation obtaining in most of our public schools where selection does not operate overtly.

We are also finding more and more children in our schools who have what I have designated as "central deafness." This term is perhaps not the most appropriate since it merely adds to the confusion of what we mean by deafness in the first place. Perhaps the term, "communication disorders" would be a better one. Among many of these children we find emotional disturbances from mild to severe. Whether this is a concomitant of the inability to communicate, or whether it is a manifestation of infantile autism or deepseated maladjustment is still not clear to the workers of this area.

Thus we see that our deaf children like their hearing brothers and sisters are by no means a homogeneous group. As a result each individual child must be dealt with according to his strengths and weaknesses. For purposes of advancing our discussion, may we assume that the child coming to school will have had his basic health needs met and that he has had both otological and audiological examinations?

The Preschool Child

Looking again at the chart we see that the remainder deals with the setting in which this population receives its education. At the preschool level some attempts to involve parents have been made but we have not defined the role of the school in the process. Everybody who works with hearing impaired children advocates the early diagnosis and evaluation of these children so that their language development can be started at the earliest possible date. The years between the ages of two and five seem to be the most critical for the acquisition of language when the organism is plastic. This is the time to help children understand that there is such a thing as language and communication. Whether this should be done in a formal or in an informal situation through parental guidance and counselling is one of the big questions. Is this the responsibility of the school or the state? If you have any comments to make at any time during my presentation, please feel free to interrupt.

Audience:

It is already established by law. It is the state's problem. This is written in the state law. It is not established by law that the state will educate deaf children at age three. The law states that the State Board of Education may grant permission to a board of education to maintain classes for deaf children above the age of three but it does not say they shall nor that it is a state responsibility. It states that they may grant permission. What the school district decides to provide is up to them.

I am just wondering whether we ought to do something for deaf children and their parents before the age of three. Perhaps itinerant teachers could be employed to go into homes and help parents find out how to deal with their children on a day to day basis. The Tracy Clinic in California is experimenting with a new approach. The clinic now has a cottage in which parents come and spend the day with their children. The clinic staff does not go out to parents' homes any more. The family goes through its daily routines there just as it does at home. The teacher works with the child and teaches the parent how to teach the child. The help that the parent gets in turn prepares him to help the child with lipreading and how to deal with the problems of deafness on a day to day basis. It becomes a tutorial program for the parents rather than formal teaching for a child. Tracy Clinic is able to do this on a selective basis. Could or should a state like Ohio give this kind of service to all parents of children with hearing defects?

Audience:

We might get away from some of the problems that involve diagnosis if we were doing a little more of this. We would know better how to place children in the right education spot. Does anybody in the room have school programs for three year olds?

Perhaps this is the time to ask the question - Shall there be a state plan for the deaf or shall the state delegate the full responsibility for programs to local communities? Generally the latter policy obtains in the United States. For instance, my state, Wisconsin, is responsible for certain programs for handicapped children by legislative directive. The local communities are delegated to do whatever they can in terms of providing services. The State does not interfere except when standards are not maintained, when teachers are not qualified, and when class size is not compatible with law. The state functions in an administrative capacity. But more and more we are coming to believe that some total statewide educational planning would be beneficial for deaf children. We must keep in mind that we are dealing with a small and widely dispersed population and that it is very difficult for any but a large metropolitan community to provide a broad spectrum of services necessary for a complete or even satisfactory program. That is why there are state schools for the deaf in all but one or two states. In the whole State of Ohio there are approximately 1500 or 1600 children in classes for the deaf. This is a very small proportion of the total school population. The problems of parent education, placement and curriculum immediately loom up as major ones. I truly believe that providing services for preschool children is a statewide rather than a local problem and should be dealt with accordingly.

I am not sure that the program should be a formal one. W. Desmond Phillips, of DePaul University, completed a study while a doctoral candidate at Columbia University on the effects of preschool education on later school achievement. The study indicated that while these children may have had some advantages in socialization, by the time they were in the fourth grade, any possible academic differentiation between them had disappeared. As far as preschool education is concerned in terms of academic achievement there does not seem to be any virtue in having three year old deaf children in a formal program, generally speaking. In a recent article in the American Annals of the Deaf, William Craig reported on a study in which he tested lipreading and reading achievement of those children who had been in a preschool program in a residential school, that is, those children who entered at age four versus those who entered at age six. He found no differences either.

Audience:

Do I understand you to say that academically there was no difference but there was a difference in their social ability?

Phillips studied academic achievement but not social achievement. But this does not mean that an individual child could not well profit from early education. I think that most children do, but actually what people are telling us is that academically it does not mean much whether or not children have been in preschool. The kinds of preschool programs that we are conducting now are not the kind of programs that are conducive to speeding up learning so that the children can reach the academic level that they ought to reach. This means that we have to do something about the preschool programs themselves.

Audience:

I have an idea that what actually went on in the four years was that most of the children were exposed to facts that did not hold. So what is the use of sending them to preschool programs?

I presented this information only to raise the question about the kind of preschool programs we should provide. I think that we cannot afford not to have preschool programs. We cannot go back to procedures used in 1817 when the first school for the deaf was established in our country. Children were twelve years old on first admission. Today, it is imperative that we devise good preschool programs. I am trying to raise the question of what kind of preschool program Ohio could have that would help accelerate the educational growth that seems to be so very vital to the achievement of our deaf children. The major handicap of deafness is language disability. We must use the early years to promote language learning.

Audience:

I think that preschool education in a more or less formal situation can help in diagnostic evaluations. If we could get preschool teachers who are good diagnosticians and evaluators, we could have the children sifted out and started in the program that seems to be the one that we expect them to follow. Never think so rigidly that there cannot be some flexibility in transfer from one program to another, or within a program. If a child is not making progress he should be placed in another program on a trial basis. If a child has improved so that his program seems no longer to challenge him, he should be considered for transfer within the program.

Audience:

We have so many teacher diagnosticians now who say, "I could teach this child if he were not brain damaged." Well, I want to have the teachers prepared to teach brain damaged children, too. Teacher education centers tend to train teachers to teach the kinds of deaf children we had in schools for the deaf fifty years ago and not the kind we have in schools for the deaf today. But the point is that we have the problem of trying to develop specialized specialists. It seems to me that it can be done within the framework of a four year situation but that is another matter altogether.

Diagnosis and Evaluation

The problem of diagnosis and evaluation has great implications for curriculum and program. We lack precise diagnostic tools for evaluating children below the age of three, and for detecting minimal brain damage which might interfere with learning. Some tests are currently being developed which might lead to a breakthrough whereby specific areas of learning disability can be pinpointed. The Illinois Test of Psycholinguistics Abilities, now being field tested, purports to diagnose the decoding, encoding and associative processes in the motor visual and auditory areas. Like other tests, it is not yet precise enough to give us much help in evaluating deaf children. The recently published Frostig Test evaluates visual perception. This test has been administered to the children at the Mary Bennett School in Los Angeles in the hope that some light will be shed on their functioning in the area of visual perception. We need many more tools which are refined enough to differentiate each child's unique problems.

While we would prefer that all teachers become specialists in diagnosis and evaluation, it does not seem realistic to expect each teacher of the deaf to achieve the necessary skills required to do a professional job as a tester. However, the teacher should be expected to be an intelligent consumer of whatever information is supplied on reports by the physician, otologist, audiologist, and psychologist. Moreover, she should be an intelligent observer of children and at least be able to record behavior so that she can write objective accounts for the other professional persons involved in the diagnosis, assuming that such persons are available to her either at the local or state level. The shortage of personnel supporting our programs is great and often services to us are minimal. To be of help to the psychologist a well prepared teacher of preschool children should have a strong background in child development, psychology, and counselling. What is sorely needed is good communication between us and the various disciplines. We tend to be suspect of each other, and this must stop if the child is to profit from our efforts to discover his potential and plot his future.

To complete and to summarize the discussion of the problems of preschool education we might say:

1. That parent guidance is the key to opening the doors of communication for the deaf child. As such, counselling service for all parents of all deaf children of all ages is a prime requisite for those who desire it. This should include counselling in depth where needed. The excellent program at the Tracy Clinic under the direction of Dr. Alathena Smith could well serve as a prototype for us.

2. Teachers of preschool children ought to have additional professional skills in the area of diagnosis and evaluation in order to start children on the right track in school.

3. We must reevaluate what is going on in our formal preschool programs in order to insure speedier acquisition of language by all deaf children.

4. A statewide plan for preschool education of the deaf would be desirable.

The School Years

In our public schools we receive children who have had preschool experiences and some who have not. They may come to school for the first time at almost any age, some as old as age twelve. Therefore, we must assume that diagnosis and evaluation is a continuing process which never stops. The initial evaluation must be reviewed from time to time in order that new and pertinent information can be incorporated into the plan for the child's school years.

Each public school is a microcosm of the macrocosm displayed at the top of the chart. What is more, there is a small but steady flow of children between the units. Our population is quite a mobile one and children may attend first one school and then another. What kind of state provision ought to be made in terms of curriculum for such mobility?

The Retarded Deaf

First let us discuss the matter of the multiply handicapped child who is also mentally retarded. Our school population is disproportionately weighted with more retarded than that of the regular schools. Dr. Richard Brill, in his study of achievement of children at the California School reports that deafness had the effect of lowering the intelligence quotient by about ten points. Deaf children, in general, require an IQ of 110 to be graduated with an academic diploma. At the lower end of the scale a deaf child may be considered a slow learner or even retarded although his IQ (on the WISC Performance Scale in this study) is 85. Some criticism has been leveled at the use of the WISC for prediction of school achievement. The Bangs' recommend the Leiter as a good predictor. Whatever tests are used, we know that deafness is a great inhibitor to the learning of language, and that its mastery is correlated with intelligence.

There are a variety of approaches which might be considered in dealing with these more deviate deaf children. While I shall not concern myself today with methods of communication, it might well be necessary to make some adaptation in their education. We will all await with interest the results of Dr. Stephen Quigley's research on the effect of methods of communication on achievement which is now being conducted at the Institute for Research on Exceptional Children at the University of Illinois.

In the meantime, we ought seriously be thinking about the kind of education we give these children. If self-sufficiency and vocational competence as adults are our goals for them, then they must be given opportunity to achieve through a well planned program from their very earliest years in school. It is too late to begin planning for them at age seventeen or eighteen. There are also those children who may never attain self-sufficiency by virtue of a constellation of factors -- their retardation, their inability to communicate, to achieve even a first grade reading competence or their personality defects which interfere with smooth inter-personal relationships. Are we going to keep these children in the ordinary classes for deaf children, ignoring them while we teach the brighter ones, or ignore the brighter ones while we concentrate on them? Individualizing instruction is one answer, but it takes a strong teacher to handle three or four tracks in one class. We could segregate them in special classes and/ or schools, and we could prepare a special curriculum for them. But have we?

Audience:

If all of you are not familiar with the curriculum prepared for slow learners in Cincinnati, I would suggest you look it over very carefully. It is a magnificent piece of work. It is based on "persistent life problems." Not only could our retarded deaf children profit from it, but ordinary deaf children could also make good use of it. We must always keep in mind there is no such thing as a curriculum for deaf children.

I agree, the curriculum guide is an excellent one, and would highly recommend it for your careful scrutiny. We do need special curricula and planning for the retarded deaf, and, in fact, for all deaf children.

Does this mean that the children are to be segregated? Special classes for the hearing retarded are an accepted fact. In the larger schools for the deaf, special classes are available for the mentally retarded. In smaller centers, making provision for this type of child is much more difficult, especially when there are not enough children to fill a class, or their ages are so diverse that it is not feasible to place then all in one class.

European schools tend to concentrate their grossly deviant children, both gifted and retarded, in special schools, especially at the high school level. In the Province of Westphalia, Germany, the slow learning children in the four state schools are singled out after a short stay in their respective schools and sent to a special school where they are taught practical arts and simple trades along with a simplified language either oral, oral and written, and aided by gesture if necessary. According to Dr. Otto Schmahl, former Principal of the Dortmund School, this separation from the ordinary children promotes learning on all fronts, for the retarded as well as the brighter children. In some sections of the United States ability grouping is being loudly challenged. It is claimed that it is very easy to misplace children whose chances for achievement may thereby be permanently crippled. If a system is rigid, and if assignment is made by inconclusive evidence the danger is a real one. If one had to choose between two evils, perhaps it might be better to allow the child to continue in the regular class, but my own feeling at present is that we must make provision for grouping these children with their peers so that they can receive the kind of education suited to them.

The chances for the integration of the retarded individual and, in fact, for any deaf person into society will depend as much on his ability to relate to the people around him as to the skills he has acquired. A person may be a good raker of leaves, but if he is incapable of controlling his temper or unwilling to take directions he cannot succeed in the workaday world. The school has a big responsibility in preparing children to good work habits, dependability and attitudes which will make them desirable employees.

Of course, many deaf youth who leave our schools will forever remain unemployable, and will need supervision in managing even simple everyday living. In several states, the institutions for the mentally retarded have set up special programs for their resident hearing impaired children. I know that Illinois and Wisconsin employ teachers of the deaf in at least one of their state institutions. We are only beginning to scratch the surface in planning for the severely retarded.

Audience:

Not only do retarded children have difficulty in managing their own affairs. Many of our so-called normal deaf have no concept of the value of money and become victims of any one who wants to shake them down. I think it is the school's responsibility to help them cope with the common everyday problems of life. We have tried to do this on an experimental basis with our work-training program for the educable mentally retarded and we think we have had considerable success.

Work study programs are growing in popularity just because of the success which they have enjoyed. It is this kind of experimentation which may well point the way to even better and more productive programs for our retarded children. In Milwaukee a number of more severely retarded children are employed at the Jewish Vocational Service and at the Goodwill Industries, both sheltered workshops. Sheltered workshop employment may be another avenue which could be explored for the more severely mutiply handicapped. I think we need statewide planning for these children.

The Deaf With Special Learning Disabilities

Many children find their way into schools for the deaf because they have not learned language, whatever the cause may be. They may be deaf, partially deaf, or have a great deal of usable hearing. But they are with us, and many of them have concomitant emotional problems. These are the children who baffle teachers of the deaf. At Central Institute for the Deaf, those children who do not respond to "traditional methods" are transferred to the Speech Department's program for Aphasic Children and are taught by the McGinnis Association Method. In short, if one procedure is not effective, another is tried. The implications for teacher education are very obvious here. On the other hand, it may point out the desirability for segregating children with common problems into special groups. As with all children, a careful diagnosis and evaluation should precede such placement. Perhaps some of these children should not even be housed with deaf children, but until other provisions are made in school systems for their education they will continue to appear in our classes.

Audience:

Would you like to comment on the movement at the University of Wisconsin-Madison which suggest that no handicapped child should be categorized and all should be educated together? They are getting a great deal of publicity.

It is interesting to note the development in thinking of the promulgator of this particular idea. At one time he strongly promoted the establishment of classes for the "exogenous" mentally retarded so that there would be no mixing of the "brain-injured" with the garden variety of retarded. I am happy to see that he is coming around to the idea that teachers are to deal with behavior and learning and not with the causes of handicapping conditions. There is no reason why mentally retarded children, no matter what the cause of their condition, should not be educated together. I see no reason why emotionally disturbed children, whether one be schizophrenic and another paranoic, cannot be educated together or even join a group containing physically handicapped children. How a child is treated depends on his behavior and the procedures used will depend on his teacher's knowledge and skill in handling him.

It is entirely possible to educate a deaf child and one with a special language disability in the same classroom, but it will take two different kinds of approaches and the children will require a great deal of individual attention. On the other hand, I think it would be foolhardy to put deaf children and blind children in the same classroom since their problems are so diverse that the blind child would be wasting time if he had to sit through language lessons suited to the deaf. I think that there are limits to the generalization that no handicapped child should be categorized or taught in a special group.

Audience:

I worked in a program where the physically handicapped, the emotionally disturbed, the retarded, the brain damaged, and the chronically ill were all educated in one building. They had contacts with each other in the recreation area and were also mixed in the classrooms. The interesting thing was that they developed better self-concepts. The disturbed children would say, "I've got legs. Thank God I can walk." The paraplegies would say, "At least I have all my buttons." Everybody felt a little bit better for the mixing. This project is continuing.

I can well appreciate what an interesting project this must be -- integration at its best! "Integration" for deaf children is another subject we could very well discuss at great length. Suffice it to say that the deaf have to learn to live in two worlds, the world of the hearing or the world of work, and the world of the deaf, or their social world. It seems to me that the school is quite responsible for their education in both of these worlds and if either is neglected we have not fulfilled our obligations. The work-study program just referred to would be a very good way to attack the problem at the high school level, but I think it ought to be started selectively at an earlier age.

One important thing we must remember is that the education of the public is as important a facet of the matter as the education of the deaf themselves. Young deaf children are often miseducated by well-meaning groups of business or professional men who like to shower them with free tickets to circuses, baseball games, rollerskating parties and the like. Deaf children readily learn to receive but never to give. However, when it comes to getting a job, they often are rejected by virtue of the very characteristics which were fostered in them as children. They expect things to go their way and when they do not they cannot understand. Living in the world of the hearing is a difficult job for the deaf person. Perhaps his salvation is his ability to identify with his own group. This should not be denied him, but yet he must learn about this other foreign world in which he is forced to live. The best way to learn about it is to experience it. Perhaps opportunity for such experiences should be included in a state plan for the deaf from early childhood to adulthood.

The Talented Deaf

The gifted and talented deaf children in our schools are sometimes the forgotten children. A teacher who is confronted with a widespread of intellectual abilities in her class may be tempted to teach to the average, and fail to stimulate and motivate the brighter children. Of course, this problem is not unique in our classes. In the last decade, most school systems have reevaluated their programs for the fast learners in the regular schools and have come up with a variety of administrative plans. Perhaps the least popular today is the special class. Contrariwise, in Europe, the bright deaf children are even segregated in special schools especially at the high school level. The Mary Hare Grammar School near Oxford, England and the School for the Deaf in Dortmund, Germany are examples of schools which are designated as centers for the brighter deaf children.

Alternatives to the special class may include partial segregation for certain subjects, individualized instruction, enrichment of the curriculum through extra-curricular activities as dramatics and dance, independent study and stimulation of creativity in the visual arts. The curriculum, therefore, must be suited to the abilities and the goals set for these children.

At the Michigan School for the Deaf a three track system is in effect, one for the academically talented, one for the mechanically and vocationally talented and one track for the remainder of the children. The Illinois School for the Deaf follows approximately the same kind of three track system at the high school level. The brighter children attending day schools generally follow the curriculum of the regular school if they have the language capability to do so. Unhappily there are quite a few intelligent deaf children in both state and day schools who are underachievers. They should be our greatest concern. My observation has been that even the brightest ones need guidance in language and speech learning. Unless they are motivated to do their best early in their school lives they will surely end up reading at about a fifth grade level and eventually find themselves able to hold only menial or semi-skilled jobs as do most of our deaf graduates now. This points to a necessity of upgrading instruction all along the way and especially improving our high school programs for our capable deaf children. The report to the Commissioner of Health, Education and Welfare mentioned earlier, makes strong recommendation for just such improvement. Many foresighted educators of the deaf have already begun a reevaluation for better programs for their talented children. Results have been already felt by increased enrollments at Gallaudet College.

Vocational Education

Vocational education is now receiving stimulation all over the country and job retraining for ordinary citizens is being subsidized by government funds and grants. Automation is soon expected to remove many jobs from the roster of occupations, that of janitorial work. Already we have robot janitors. In fact, ten years from now who knows what skills will be demanded of our deaf youth. Undoubtedly the new jobs will require an academic education beyond the high school level. Therefore, a realistic approach to vocational education must be adopted. We will not need as many deaf printers, shoe repairers, and laundry workers as we do today. If the deaf are to enter service jobs, they must be prepared to work with and for others, to understand themselves and their roles better than they do now. Rather than training for specific jobs we will be training attitudes. Again, work school experiences seem invaluable for preparation of our deaf young people. But more than that, deaf children must learn language skills earlier and faster than ever before if they are going to compete for the available jobs.

Audience:

There is a movement on foot to establish regional vocational schools for the deaf for job training and retraining.

And a national technical institute is also being planned. This school is to be located in a city with diversified industry where the mechanically talented deaf can receive training beyond the high school level and also receive a bachelor's degree. It is expected to supplement the opportunities offered by the liberal arts program at Gallaudet College. Perhaps we are on the right road now. If it is necessary for the government to champion a national institute it seems reasonable that it is not too soon for each state to spur statewide programs or to cooperate in a regional program for the improvement of vocational education for the deaf.

The Role of Vocational Rehabilitation Administration

In relation to job training and placement, we cannot ignore the role of Vocational Rehabilitation Administration and government job placement agencies. Vocational Rehabilitation workers are generally disillusioned with the products of our schools. Perhaps most of their clients are our failures and they generalize to the whole group of deaf young people from contacts with these who have not succeeded in gaining ability to communicate well or to achieve academically at a level to allow them to be trained for skilled jobs. They have a reasonable complaint. But the pot's call the kettle black will not solve the problem. As with other ancillary workers - the psychologists, audiologists, social workers and the like - we must make serious efforts to communicate our problems with the individual rehabilitation workers assigned to our schools so that we can come to a mutual understanding of the deaf child's problems. We need rehabilitation workers who understand deaf children just as much as we need good teachers who understand rehabilitation workers! A series of regional meetings of Rehabilitation workers and teachers of the deaf sponsored by Vocational Rehabilitation Administration, one of which some of us here attended recently, should lead to better relationships.

The Adult Deaf

At the bottom of our chart we see a hazy area labeled Adult Education. Whose responsibility is it to provid continuing education for those who desire it? The public schools are generally responsible for youth to the age of twenty-one, and thereafter adult education for the deaf is nobody's business. Beyond the vocational aspects just mentioned a kind of informal education available in large cities to hearing people is not available to the deaf. I am thinking of courses offered in evening classes in such subjects as sports, typing, dressmaking, taxes, investments and the like. While these courses are technically available to the deaf, few if any avail themselves of them because of the communication problem involved. Adult classes in English, law, economics and the like have been initiated at San Jose State College and have become very popular and very satisfactory. More and more, we should see these kinds of programs established in the larger communities of our country.

On the whole, American deaf adults are pretty independent and self-sufficient in comparison with their European counterparts. While this is laudatory from the standpoint of emotional health, it leaves something to be desired in terms of mental growth and learning. We cannot force any of our deaf to attend classes, but we should make them available for those who realize that education does not stop with the day they leave school.

Should the planning for the adult deaf be done at a state level or should each community be delegated the responsibility? If so, who will initiate such programs and who will pay for them? These are unanswered questions which should seriously be considered in an overall educational program for the deaf from preschool through adulthood.

Curriculum

Throughout our discussion the subject of curriculum has frequently recurred. I believe we are all agreed that there cannot be one curriculum for deaf children. However, to achieve a satisfactory plan for every child requires a constant perusal of what we are presently including in the curriculum with a view to revamping, revising and reworking it to meet changing times and changing needs. This is not a task for one person, but must become a cooperative effort involving teachers, administrators, parents, and even children on an organized basis. The culture in which we live dictates a good deal of what goes into the curriculum. Current literature also stresses the necessity for including in the curriculum an understanding of the structure of all subject matter to be taught. The memorization of facts is not the goal of the subject matter specialists. They are interested in having students see relationships through understanding the overall structure of the subject. There is so much to learn today that nobody can be expected to learn everything. Therefore, selection must be made. What is chosen depends on what you all, working a group, decide to include in a curriculum for Ohio's deaf children. Do you think a broad state plan would be beneficial for the deaf in Ohio? Or should each school and each community choose its own plan? Should the curriculum for the deaf follow that of the hearing schools or should it be devised specifically for the deaf? How might the curriculum differ from that of the hearing? These are questions which must be answered before curriculum changes are initiated. The previously mentioned Cincinnati Curriculum for the Retarded would be a good starting point for discussion if revision were to become a statewide project. I recommend it to you for your serious consideration.

Language and Language Learning

Basic to achievement and adjustment is the learning of language. The total complicated process of language acquisition includes the receiving or decoding of messages, a cerebral mediation or association not yet well understood, and the encoding or production of messages. The deaf must depend largely on vision supplemented by hearing, if possible, to decode language. In its externalized visual movement forms, lipreading and fingerspelling become the major modes for reception. Reading requires knowledge of the written form of language, a related but different form from the spoken. The encoding process requires the motor production of a specifically designated and very complex code through either speech and/or fingerspelling and writing. To date nobody has discovered the magic formula which will insure mastery by deaf children of this complicated learning task.

I shall not concern myself with modes of communication for I consider this a minor aspect of the larger problem of learning to use symbols and of arranging them in patterns which carry meaning. I may be completely in error and if I am I shall be the first to admit it. To know a language is to be able to produce it motorically and thereby convey meaningful messages to others or even to oneself. The total process must engage our attention, not just fragments of it. Instead I should like to turn our attention to procedures which hopefully will speed up language learning, to describe some ongoing research in this subject, and to discuss implications for teacher education and supervision of teachers in-service to the end that the entire program is improved.

Nobody really knows how language is learned. Theories try to explain it but when all is said and done, they are still theories. Nevertheless, there are a few principles which psychologists will accede to as basic to any kind of learning.

1. The learner's capacities are important in the determination of how much and how fast he learns.

2. Learning under control of reward is preferable to learning under punishment.

3. Learning under control of success is preferable to failure.

4. Active participation of the learner is preferable to passive reception.

5. Overlearning of skills requires meaningful spaced practice.

6. The learner who is motivated acquires what he learns more readily.

7. Information about mistakes made as well as knowledge of good performance aids learning.

8. Realistic goal setting leads to more satisfactory learning than unrealistic ones.

9. Transfer to new tasks will be better if the learner can discover relationships.

These principles have significance for the teaching-learning act. A teacher who is unfamiliar with them may waste a lot of the children's time if he does most of the talking while the children sit politely dreaming their own dreams. Only active participation and constant practice of meaningful material which is neither to easy to too difficult will promote language learning. Moreover, language acquisition is an idiosyncratic process. Each child proceeds at his own rate despite what anyone might hope for. What is clear to one child may be a puzzle to his neighbor. Therefore, language teaching must be individualized at all steps along the way using material suited to the ability and understanding of each child so he can feel success through its mastery. Meaning is paced by experience. Consequently children must be in direct contact with their environment through sense experiences if clear concepts of vocabulary and structure are to be developed. If what I have just said is true, a knowledgeable teacher who has seven or eight children in his class will have seven or eight language and reading programs going, all at the same time. He needs help to manage such a situation!

Some very interesting research in individualizing language instruction is being conducted at the Illinois School for the Deaf and holds promise for such help. Under a grant from Captioned Films, Dr. Frank Withrow is preparing a series of one hundred or more films, hundreds of slides and pictures portraying a large noun vocabulary, and a smaller one of verbs, adjectives and prepositional phrases for use with young children. The vocabulary is eventually used in sentences and descriptions. The materials are so simply constructed and housed that a child may use them independently after he has learned to load the cartridges into the movie and slide projectors and to stop and start the machines. I observed youngsters age six and seven using these materials and was especially pleased to see how motivating they were and how easy they were to use. These materials will soon be field tested.

In the new research building at the Illinois School, the classrooms will be constructed to house individual units for self-teaching. It would not surprise me if all future building for deaf children would incorporate booths for auto instruction into each classroom.

The teaching machine, using the term generically, is a new tool which can become a great boon in individualizing instruction. The machine is not to be thought of as a substitiute for a teacher, but rather as an ancillary devise which will help children learn to learn. No machine ever scolds a child if he makes a mistake and it usually tells him if he is correct. The machine may even come alike for the child. I saw one little boy having quite a conversation with the film he was viewing. This child was working at his own speed and he was participating actively every minute while at the machine. He was really learning and enjoying it. He was highly motivated.

While Dr. Withrow's materials cannot be considered as being programmed in the technical sense of the word, some programmed materials are now under construction in the LIFE - NEA project directed by Harley Woodin under another grant from Captioned Films. This is an ambitious project which is to use a specially designed machine for a specially instructed program to teach language step by step from the very beginning to about the first grade reading level. Picture dictionaries and readers are to accompany the programmed materials. At present only two people are engaged in programming, but the staff is to be increased next year. Some of these materials are also ready for field testing. Since researchers must go where the children are, teachers will undoubtedly be asked to participate in these projects. I hope they will do so willingly even though it may seem an intrusion on their privacy at times. Besides, experienced teachers for the deaf should be encouraged to initiate research themselves and hopefully share it with others. They know the problems needing research better than anybody else.

The few studies on programmed learning which have been conducted with deaf children point out that children cannot learn more than what the program teaches but they learn it faster and retain it longer than by the usual methods. If this be true then perhaps individualized automated self-instruction may be one ingredient of that magic formula we are looking for.

Programmed learning is only as good as the program itself. In order to construct a good program it is necessary to know how the English language operates in its finest detail. Fortunately there has been a great resurgence in linguistic study in the last ten years. Researchers are in the process of analyzing and describing our language as it has never been described before. A perusal of present day structural and transformational grammar points out how complicated the rules of English syntax are. Teachers of foreign students in our colleges have planned programs of instruction based on this recent research. While linguists cannot tell us how to teach language to our deaf children, they are furnishing us with enough raw material to keep us busy for years. I strongly believe the teachers of the deaf, both new and old, should make use of the linguistic knowledge accumulated during the last decade. I think it is time that we look over our language outlines which we have depended on year after year and evaluate their contents. Some schools use outlines published as long ago as forty years. We are also learning more and more about the language capabilities of the deaf. Studies have pointed out that deaf children have difficulty in acquiring vocabulary, especially abstract vocabulary; that they learn lexical meanings more readily than morphemic ones; that their organization of sentences tends to be limited to the basic patterns of subject, verb, complement; that they have great difficulty in mastering verb phrase structure, the English article, and pronouns. With this knowledge, we can attack the problem of teaching our language code more intelligently and systematically than we have in the past.

Now I propose a series of questions which we must ask ourselves. Who is to revise the language outlines we use? Shall it be left to professional programmers, or shall each teacher or each school be responsible for his own programming? Is there a basic form of English we can teach our deaf children? Shall we teach two forms, a spoken or fingerspelled form, and a written form? Shall the state of Ohio adopt a basic statewide language plan? Undoubtedly you will have many more questions relating to this aspect of improving instruction, and will want to discuss them in your group meetings.

The Teacher of the Deaf

The teacher is perhaps the most significant factor in the education of the deaf child. Hearing children learn in spite of their teachers, but deaf children do not. This is not to disregard the important role that parents or parent surrogates play in reinforcement outside the classroom of language the children learn in school. My observation has been that often the difference between success and failure, everything else being equal, is the help the child gets outside the classroom. Therefore, parent guidance and house parent guidance must be a continuing project to insure constant practice in language usage. Who gives this guidance? The teacher, of course. So we come back to her preparation. Is she prepared to act as tutor of children and guider of parents? I think that most teacher education programs, except the one connected with the Tracy Clinic, neglect this aspect of preparation. Students are not prepared to guide parents.

Audience:

Do you think that a teacher can get adequate training in a four-year program?

We still offer a four-year program leading to a baccalaureate degree, so I believe it can be done. Our undergraduate students come to us pretty well prepared in basic areas such as linguistics and grammar, speech, phonetics and the like. By virtue of our being able to guide undergraduates for several years before they enter the professional year we can insure the necessary background which we do not always find in graduates who are with us for only two summers and one academic year.

Audience:

Do you have problems in recruiting?

Indeed we do. Last year I had twenty students in my sophomore class. These dwindled to six juniors and who knows how many will remain as seniors. More than half of the sophomores were unable to maintain a grade point average high enough to admit them to the School of Education. One was married and one transferred to another college. It is impossible in our program to attract seniors since they do not have the background accumulated by our students over a four-year period. Several graduate scholarships also went begging because applicants could not meet our entrance requirements of a 2.75 grade point average or supply the necessary eighteen credits in education. Scholarships are not the complete answer to recruiting, although they help.

In addition to the out-of-school reinforcement which deaf children ought to be privileged to have in order to stabilize their language, I believe that they should also have opportunity to engage in some planned educational activities during the summer. Unless children are continuously kept reviewing and practicing the language to which they have been exposed they cannot maintain its usage. We all know how the summer's vacation obliterates much of what we think the children knew in June. The extension of the regular school year through half-day summer school programs or school-camping experiences seems to be a very logical step in insuring steady progress in learning not only language but of social studies, nature, sports and the like. Who will teach in these summer schools? Hopefully, their teachers. But if it is not possible to engage their own teachers for a summer program an alternative might be to hire teachers-in-training or newly graduated students as interns. A team teaching approach would require fewer master teachers, but at the same time give inexperienced persons opportunity to try out their skills under the direction of an experienced leader. Deaf children have so much to learn and so little time to learn it in that every good program ought to make provision for summer teaching and learning .

When all is said and done, there still are not enough trained teachers of the deaf to man our classes. And even if there were, there are not enough good teachers among them to leave the children completely at their mercy. As a result, in-service-education is a requisite to maintaining good program and supervision becomes very important for the upgrading of instruction. To provide supervison it is necessary to gather enough children into centers to form a sufficient number of classes to warrant hiring a supervisor. The one class situation is discouraging for both teacher and children alike. The teacher is usually unable to discuss her problems with local supervisors not trained to teach the deaf and the children see no future for themselves. They seem to be going nowhere except to the same classroom day after day and year after year. As a result, an overall state plan for the location of classes should take into consideration the development of centers in populous areas so that supervision can become a part of the plan. Please do not ask where the supervisors are coming from! All I can tell you is that we need good ones in strategic spots if we are to improve our programs.

In summary we can say that an optimium program for deaf children will include among other items:

1. Provision for individualizing instruction.

2. Upgrading teacher performance through supervision.

3. Continuous curriculum planning to meet the varying capacities of the pupils.

4. Provision for a total educational plan from preschool to adulthood.

5. Parent guidance at all levels.
6. Extension of the school year.
7. Participation in research programs to advance knowledge.

Problem Areas in Curriculum for the Deaf

I.

1. What are the major goals of education for our deaf population?
2. Who should be responsible for preschool education of children and parents?
3. What provisions should be made for continuing education of parents? Whose responsibility is it?
4. What provisions are available for differential diagnostic services in the state?
5. How are deaf children being taught to learn?
6. How can deaf children be motivated to want to learn?
7. How can the deaf be best prepared to live in two worlds?
8. Whose responsibility is continuing adult education?
9. How can language learning be speeded up for deaf children?

II.

1. Homogeneous grouping: Is it a myth?
2. How can grouping for effective learning best be accomplished in your school for the deaf?
   (Nongrading, multigrading, self-contained classroom vs. departmentalization, team teaching vs. teacher and non-professional assistance)
3. How can flexibility in grouping be maintained yet provide for sequential steps in language development?
4. Who makes the decisions as to where a child is placed in a school program?
5. What provision is made for different rates and means of achievement?
6. How can we teach language better and faster to deaf children?

Problem Areas in Curriculum for the Deaf (Con't)

III.

1. Shall there be a state wide curriculum for deaf children?
2. Who should make decisions about the curriculum: faculties; committees; individual teachers; supervising teachers?
3. How should the curriculum be organized to give appropriate direction to the learning process?
4. How can schools for the deaf make wise selection of content from the vast and evergrowing body of knowledge?
5. How can the quality of instructional materials be improved?
6. How can teacher competency be improved?
7. Can teachers of the deaf be taught to be creative and to participate in research to promote knowledge of classroom procedures?
8. What should be the scope and content of local adult deaf programs?
9. In order that educational retardation of deaf children may be diminished, how can language learning be accelerated?

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PART III

SUMMARY AND REPORTS OF DISCUSSION GROUPS

In the final session devoted to summary and recommendations were categorized into four areas; population, instruction, personnel and staff and demonstration, research and evaluation. The complete summaries follow.

A. CHILDREN - POPULATION

1. Since the early recognition of a hearing handicap is desirable, we suggest the Ohio Department of Health expand their services to encompass the infant and preschool child, especially in high risk groups. It is further suggested that physicians and parents be offered educational opportunities concerning diagnostic treatment and early management. A desirable feature of this program would be the establishment of a registry of preschool hearing handicapped children.

2. We recommend that a committee consider what constitutes educability for deaf children.

3. We suggest that standards for admission be reviewed by a committee consisting of representatives of the State Department of Education, supervisors, audiologists and teachers. This committee should consider the following question:
   Should local districts be provided with the opportunity for a review of the evidence concerning the needs of a child who may not be eligible for placement in a specific program according to standards but who may be eligible by the manner in which he functions?

   1st Reaction: The local school personnel should have the freedom to accept and place children on the basis of evidence of the individual functioning of a child.

   2nd Reaction: The local school personnel should have the responsibility to accept and place children on the basis of the child's ability to profit from the exisiting program.

4. We recommend that the local school district accept children with a mental age of four. Research and demonstration programs should be established to determine what should be done with children under the mental age of four, and who should do it.

1st Reaction: We recommend that deaf children having a mental age of three years be referred to and accepted by schools haveing appropriate preschool programs.

2nd Reaction: We recommend that a child at age three having sufficient physical, social, emotional and mental maturity be referred to and considered for a trial placement by schools maintaining appropriate programs.

5. For those children who can profit from an educational program but for whom no local programs are available, a Central Diagnostic Clinic should provide services of trained, experienced teachers of the deaf.

1st Reaction: Preschool deaf children who have no access to appropriate programs should be served by a trained and experienced teacher of the deaf, supervised by the Central Diagnostic Clinic.

6. Special classes for multi-handicapped deaf children should be provided.

1st Reaction: Further study of realistic placement of multi-handicapped deaf children should be made.

7. We encourage the development of programs leading to the expansion of diagnostic teams so as to expand services to local school districts.

1st Reaction: Local diagnostic teaching units should be established in addition to a central unit which can provide services on an extended term basis to determine realistic school placement or treatment, for those coming into a program for the first time and for those who appear to be misplaced educationally. The personnel involved in making decisions with regard to placement for the local facility should include the person who has been teaching the child or who is to consider future placement of the child in question.

2nd Reaction: Local diagnostic teaching units should be established on an extended term basis, to determine school placement or treatment for those children new to the program or those children determined to be misplaced educationally.

8. For those children under age three and for those three or over who cannot profit from a preschool program, the Ohio Department of Health should provide services by appropriately prepared personnel.

9. A follow-up study should be made of the academic progress of hard of hearing children and adequate educational opportunities be provided for these children if the need is indicated.

   1st Reaction: Further study of identification, evaluation, placement, programming and follow-up of the hard of hearing should be made.

   2nd Reaction: The proposed committee to review standards for admission (see number 3 above) should consider the following questions:

   a. Should age of admission to the program for the hard of hearing be lowered?

   b. Should class size for the hard of hearing be more flexible?

10. The proposed committee (see number 3 above) should consider the need for standards to be written for language handicapped children.

B. PROGRAM-INSTRUCTION

A. Educational

1. Facilities

a. Preschool
We recommend that a central registry of preschool deaf children be established and that services be provided to meet the needs of children and parents.

1st Reaction: The Department of Health should be responsible for the establishment of a central registry of hearing impaired children. To accomplish this, the following are recommended:

(1) All suspected cases should be referred to the Hearing Conservation Unit of the M.C.H., Division of O.D.H.

(2) The Division should be responsible for the establishment of a diagnosis.

(3) The information from the registry including the diagnostic evaluation should be disseminated to the Department of Education, Division of Special Education, Department of Public Welfare, Division of Crippled Children's Services.

(4) The Division of Special Education, Ohio Department of Education, shall forward this information to local school boards and other appropriate school personnel in the geographic area.

b. Elementary
We recommend that centralized classrooms designated for the deaf be provided to accomodate the population of deaf children. This facility should be near existing educational facilities for children with normal hearing.

1st Reaction: Facilities should be provided for the instruction of deaf children at the preschool, elementary and secondary levels.

2nd Reaction: Deaf children should be educated in a centralized facility which is part of a regular school. Maximum association with hearing children in the school should be achieved in areas other than the academic.

c. Secondary - Jr. and Sr. High
We recommend classrooms for hearing impaired children be provided and that these classrooms be located within regular public schools, preferably under the same board of education as the program in which the children were originally programmed.

1st Reaction: Schools should make provision for work-training programs.

2. Program Organization
We recommend that present standards should be considered as minimal. The four year range in chronological age and/or academic achievement should be questioned.

Provision should be made at the state level for encouraging local staffs to include academic supervisors of the preschool, elementary and secondary programs in addition to the administrator whose responsibilities are confined to the program for hearing impaired children.

1st Reaction: Cooperative action should be taken among districts in providing programs for hearing handicapped children.
For example: One district might provide a centralized facility for children of elementary school age while another district might provide a high school program for deaf children. This plan would eliminate one and two unit programs throughout the state, and provide program continuity, and proper supervision of programs for hearing handicapped children.

2nd Reaction: The local districts should determine a reasonable time for a child to travel to and from school. The district may refuse to place a child if the child is in transit for an unreasonable length of time. A child refused placement should be referred to the Central Educational Clinic Team for proper placement.

3rd Reaction: All school programs should make every effort to investigate ways and means of establishing close working relationships with community agencies in order to better utilize existing services. These agencies include Speech and Hearing Centers, B.V.R., Services for Crippled Children, Welfare Agencies, Family Services, Diagnostic Centers, etc.

4th Reaction: Counseling services for the deaf should be established on a state level, or increased effort should be made to utilize the existing counseling services available in local school districts.

5th Reaction: The deaf should be included in the work-study program.

6th Reaction: Counseling service for parents of deaf children should be provided from the time the children are identified until their education is completed.

3. Curriculum

We recommend that a workshop be provided exclusively for the consideration of curriculum.

1st Reaction: The Division of Special Education should institute a workshop for the purpose of constructing a Curriculum Guide for deaf children. The workshop should include teachers of the deaf and personnel from the time the child is identified until he leaves school.

2nd Reaction: Consultation with personnel from allied disciplines should precede the writing of the guide. It is suggested that these consultants be obtained from groups concerned with regular school programs.

3rd Reaction: There should be an investigation of the possibility of obtaining Federal Grants to provide financial assistance for Workshop participants and consultants.

4th Reaction: Leadership for the purpose of constructing guidelines for the basic skill competencies should be provided.

5th Reaction: The curriculum workshop should include participation of consultants from other related areas of education.

C. PERSONNEL AND STAFF

To initiate a program for deaf children a local school district should have eight classroom units as a minimum. The school system should have supportive services and a maximum teacher pupil ratio of one to eight. In addition, a full-time administrator or supervisor should be available for each 8 units and one additional supervisor for each additional 10 units.

Minimal requirements

1. Preschool - one or more units
2. Elementary - five or more units
3. Junior High - ?
4. Senior High - ?

1st Reaction: We recommend that educational programs for the deaf be established and/or maintained only in school districts where a comprehensive special education program exists.

We recommend that programs consisting of five units may be initiated although a minimum of 8 units are desirable.

2nd Reaction: We recommend that regional supervisors with training and experience in teaching the deaf be employed to assist in the development of instructional programs and curriculum guides and to assist in the placement of children in programs that would best meet individual needs. This person should be able to coordinate research and/or demonstration projects within the regional programs.

We further recommend that each program have a local academic supervisor trained and experienced in teaching the deaf.

a. Programs consisting of 8 units or more should have an administrator in addition to an academic supervisor. The administrator's responsibilities should be confined to the program for hearing impaired children.

b. Programs having as many as 16 units should have:

   (1) an academic supervisor for preschool classes

   (2) an academic supervisor for elementary classes

   (3) an academic supervisor for secondary classes and an administrator for the program.

Funds should be made available to provide the necessary secretarial personnel for each program.

Supportive Services of the following should be included:

1. Audiologist - (part-time or contract)
2. Psychologist - (on call at least one day a week)

3. Nurse

4. Medical Services:
   - a. Otologist
   - b. Pediatrician
   - c. Ophthalmologist
   - d. Psychiatrist

   Other Supporting Services:
   - Occupational Therapist
   - Physical Therapist
   - Speech Therapist
   - Speech Pathologist

5. Houseparents (Residential) 1 to 15 children ratio

6. Vocational and Rehabilitation Counselors

7. Special Teachers
   - a. Home Economics
   - b. Art
   - c. Vocational
   - d. Physical Education

8. An "Education-Counselor" - a social service worker to coordinate supportive services and to serve as a liaison person between the educational system and community agencies.

9. Secretarial Staff

10. Maintenance Staff

11. Electronic Technician (available)

12. Audio-Visual Specialist (available)

13. Librarian

14. Resource Teachers

1st Reaction: We recommend that dental service and annual physical examinations be provided children.

2nd Reaction: We recommend that supportive services should include:

a. Arts and Crafts Teacher (now only art)
b. Supervising Speech Teacher
c. Supervising Music Teacher
d. Supervising Reading Teacher

Recommendation: The provision of a counselor to provide regional post-secondary guidance. The services of a trained teacher of the deaf who meets the necessary qualifications for college teaching should be available to assist deaf college students on Ohio campuses either on an individual campus or on a regional group of campuses depending upon the number of such college students involved.

Recommendation: That a research director be provided at the state level to coordinate research activities.

Staff Development

Pre-service level:

1. Teacher training programs should be offered at universities having a well trained staff, inter-departmental cooperation, and adequate opportunity for observatio and practice teaching.

2. Guidelines for program development should follow the outline of the CEC Virginia Beach Conference Report 1964.

In-Service level:

1. Demonstration teaching

2. Workshops (state and local)

3. Intra-program

4. Leadership to encourage teachers' experimentation and innovative practices involving other disciplines.

5. Areas of concern may be:
   a. Psychology
   b. Audiology
   c. Curriculum development
   d. Speech skills
   e. Child growth and development
   f. Development of communication with parents
   g. Teacher pupil relationship

1st Reaction: We recommend that student teaching must be supervised by university personnel in cooperation with the program supervisor.

D. DEMONSTRATION - RESEARCH - EVALUATION

This committee is concerned that the time lag is too wide between the discovery of research findings from many disciplines related to the education of the deaf and the implementation of this into training programs. It is recommended that a procedure be established which will reduce the lag and at the same time screen out for trial and dissemination that research which has practical application. To accomplish this committees should be established composed of persons who have demonstrated competence in scientific research. The five phases of the program should include:

1. Review of the literature
2. Selection of research for demonstration
3. Field test the research
4. Evaluation of the results
5. Dissemination of the findings

Research is being conducted by those in the field. There is need for demonstration projects which relate to the total program of education for deaf children and youth.

The findings of the projects should be tested and evaluated and the results disseminated for possible adoption in programs. Ten areas of concern should be investigated:

1. Parent education - Guidance and Counseling
2. Demonstration projects to discover visual and perceptive inadequacies and to find suitable techniques for developing such skills.
3. Auditory training - techniques and program development
4. Demonstration projects for teaching mathematics to include the "New Math"
5. Demonstration projects for the teaching of reading to include the investigation of the language of the idiom, colloquial language, synonyms, antonyms, simile, etc.
6. Demonstration projects for Work-training - Work-study and Sheltered Work-shops.
7. Demonstration projects for research in visual aids.
8. Demonstration projects to develop guidelines for self-improvement, including instruction in growth and development.
9. Demonstration projects in the teaching of lipreading using every opportunity to provide the instruction in meaningful experiences.
10. Consider ways and means of disseminating information related to demonstration projects and research.

Evaluation of Program and Staff

It is suggested that definite criteria be established, to determine the effectiveness of educational programs for deaf children.

1st Reaction: The achievement testing of deaf children should be investigated.

2nd Reaction: We recommend that:

1. Research be conducted on programming material for deaf children

2. Research should be conducted to determine the effectiveness of using overhead projectors in the instruction of the deaf.

3. Research should be conducted to determine the effectiveness of various curricula for the various deaf.

4. Research should be conducted to determine ways of evaluating language of deaf children.

5. Research should be conducted to determine procedures for following-up graduates of programs for the deaf.

6. The following administrative area should be investigated:
   a. The role of the supervisor
   b. The optimum load of the supervisor
   c. Use of "The Master Teacher Approval"

7. Results and findings of all research and demonstration programs be sent to the participants.

8. All instruction be evaluated in terms of its original aims and objectives.

9. All persons concerned with the education of hearing impaired children be familiar with research in related fields.

PART IV

CONSULTANTS

Dr. Robert Goldstein
Audiologist Jewish Hospital
St. Louis, Missouri

Fred Richardson, M.D.
Department of Pediatrics
John Hopkins Hospital
Baltimore, Maryland

Miss Alice Streng
Director of Special Education
University of Wisconsin
Madison, Wisconsin

STAFF

R. A. Horn, Director
Division of Special Education

Effie Ellis, M.D., Chief
Division of Maternal and Child Health

S. J. Bonham, Chief Psychologist
Division of Special Education

Edward C. Grover, Administrative Assistant
Division of Special Education

Larry Muldoon, Administrative Assistant
Division of Maternal and Child Health

Joseph Todd, Educational Specialist
Division of Special Education

PARTICIPANTS

Name	School District	Position
Dr. E. R. Abernathy	Ohio School for the Deaf	Superintendent
Donald Adamshick	Ohio School for the Deaf	Psychologist
Elizabeth Aplin, M.D.	Crippled Children's Services	Medical Director
William Beitzel	Dayton City Schools	Supervisor of Special Education
James Card	Columbus City Schools	Supervisor of Program
George Davis	Columbus Hearing and Speech Center	Director
Keith Gainey	Cleveland City Schools	Assistant Superintendent
Douglas E. Gotro	Lakewood City Schools	Coordinator
William Grimm	Ohio Department of Health	Supervisor
Merlen Gruenhagen	Ohio School for the Deaf	Principal
William Hartwig	Ohio School for the Deaf	Audiologist
Dr. Elizabeth Hawk	Toledo City Schools	Supervisor of Program
Nicholas Honda	Youngstown City Schools	Director of Special Education
Christina C. Jones	Ohio State University	
Lois Keizer	Cleveland	Principal
Alice Kent	East Cleveland City Schools	Supervisor of Program
Katherine Miner	Kent State University	Assistant Professor

PARTICIPANTS

Name	School District	Position
Mabel Nilson	Ohio School for the Deaf	Educational Specialist
Genevieve Roberts	University of Cincinnati	Assistant Professor
Ann Sedelmaier	Ohio Department of Health	Supervisor of Nursing Consultant
Martha Spencer	Ohio School for the Deaf	Educational Specialist
Eugene Stevens	Cincinnati City Schools	Supervisor of Special Education
Donald Swift	Lorain City Schools	Supervisor of Testing and Guidance